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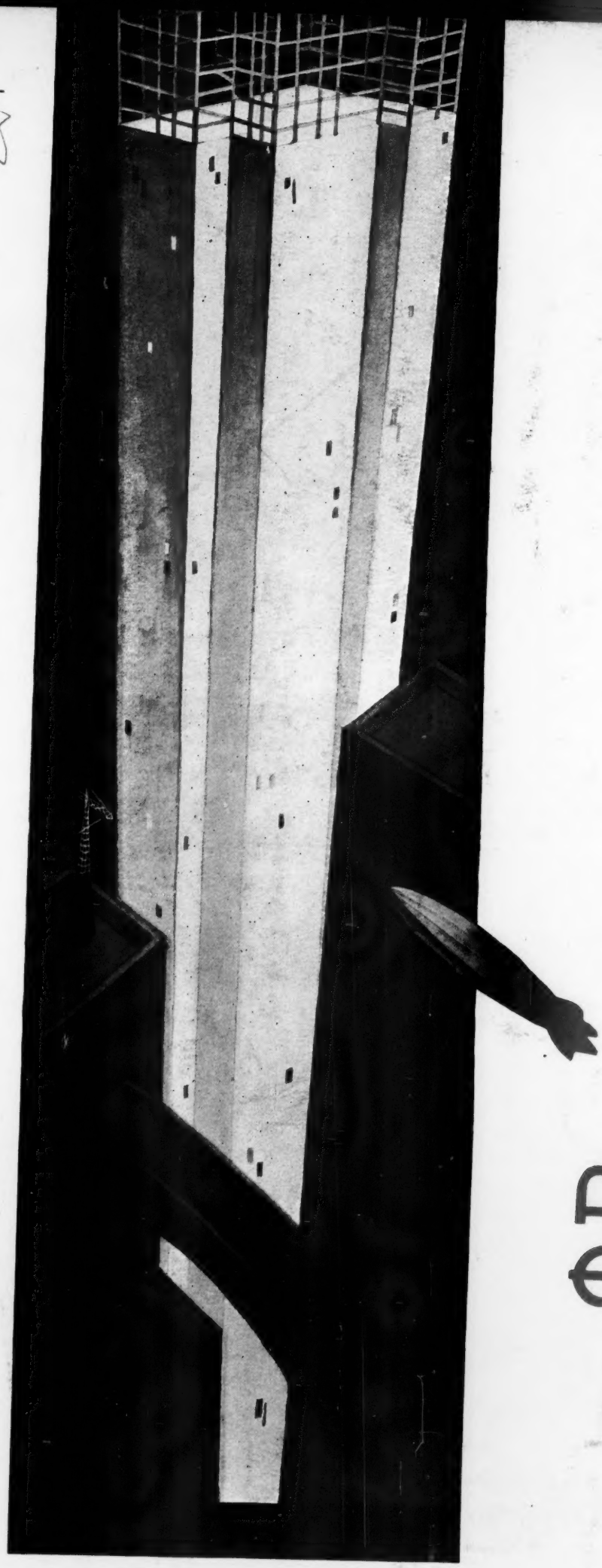

The AMERICAN ENGINEER

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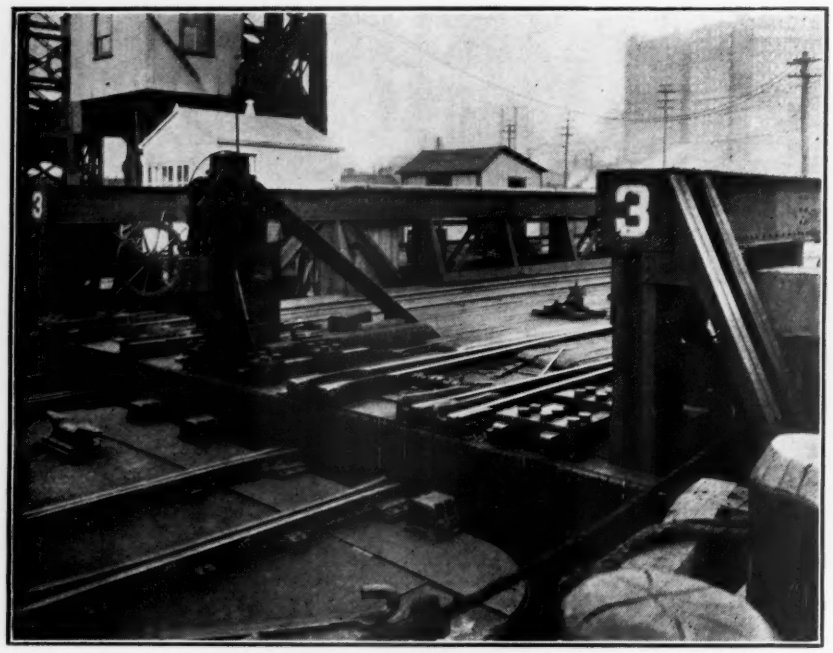

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CONTENTS

Page

Personnel of the Executive Board 2
The Nation Awakes 3
Public Works for Public Good 4
The Future Standard of Living of the American Worker 5
Need for Municipal Cooperation 6
Land Surveying 7
The Engineer a Public Servant 8
Heroic Death of Alfred Masury 9
General News and Comments 10
The Engineer Addresses the Country
Vocational Guidance in Engineering
Commemorate Brooklyn Bridge Opening
Examination Questions 11
New York News and Activities 12
Annual Convention
Recent Accomplishments of the State Society
New Jersey News and Activities 13
Comments of the Editor
Licenses Granted 25
Professional Directory 27

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THE NATION AWAKENS

President Inaugurates Public Works Program

Engineer Supplants Financier as Economic Director

BY a long and tortuous path, the Federal Government has finally arrived at a conclusion which, to the Engineer, has been obvious throughout the nation's peringrinations in search of panaceas for the evil of excessive unemployment.

For four years the appeal of millions asking only the right to labor, has been answered by prophecies, predictions, demands for patience, puerile misnamed psychological effusions, tax revisions, moratoriums, budget balancing and credits to everyone but the man who asked only that he be given an opportunity to work.

What, one may justly ask, was the reason for such delay in recognizing a fundamental principle without whose application there can be no peace and contentment for any people?

To many at least, the answer is obvious. Those in a position to direct the affairs of a nation were more concerned with preserving a social order that made possible enormous concentration, of what appeared to its possessors to be wealth, than in relieving human suffering and thereby assuring the continuance of American Institutions and American Ideals.

One of the great lessons to be learned from the past few years, is that it is futile to leave to private agencies the solution of problems that concern the entire people of a nation. The recognized doctrine, that government exists for the people, rather than the people exist for the government, makes the minimizing of want and suffering a governmental obligation.

Balancing budgets, and other measures attempted to date, may serve to establish credit in the eyes of individuals and groups capable of lending money, (who in doing so demand both security and interest of such proportions as to plague the borrower) but such procedure cannot per se distribute permanent relief or create employment.

It is illogical to contend that revenues predicated upon collectable credits, incomes and salable commodities can be scientifically equated with governmental expenses (which, in the ordinary course of events, are contingent upon an ever increasing population and civilization) whilst the sources of income become more and more impoverished.

NOTE:—Due to a typographical error, the word "Peregrinations," appearing in the first paragraph above was misspelled.

No nation, regardless of its wealth, can remain prosperous and contented wherein the said wealth is concentrated or hoarded. The reasonable distribution of wealth is a sine qua non of national prosperity and the accomplishment of this distribution through the medium of creative labor is unimpeachable.

The most certain, definite and justifiable method of creating and distributing wealth, and of increasing governmental revenues, is the improvement of the land from which all wealth springs. The construction of public and private projects predicated upon engineering knowledge, skill and judgment, serves not only to employ people but to create and distribute those things which mankind recognizes as the evidence of prosperity.

The new President of the United States has, during his brief term of office, manifested an unparalled capacity and energy and an unsurpassed concern for human rights, but no act of his or of the Congress approaches in significance and importance the Federal Program of Public Works. It is the one great forward step of the past few years toward overcoming the cause of the distress, —excessive unemployment.

At the moment, the problem of financing the program is an important factor in its consummation. When the $3,300,000,000 provided for has been expended what will be the procedure if the desired results have not been attained? It will be necessary to again seek revenue to finance a continuance of the program. The Editor believes that even now, the mobilization of wealth through incomes taxed on a sliding percentage basis and accompanied by a moratorium on all drives, solicitations, appeals and collections upon the part of public or private agencies wherein the object thereof is relief of financial distress, is the one safe and certain means of:- 1st, providing a source of revenue; 2nd, avoiding the payment of usurious rates of interest required for borrowed money; 3rd, assuring a renewal source in the event that several years will be required to overcome the present condition. Such a policy would serve to materially reduce the taxes, mostly on real estate and small incomes, which at present, in states and municipalities, provide the monies for relief of the unemployed. (*Continued on Page 14*)

PUBLIC WORKS FOR PUBLIC GOOD

By Roscoe Parke McClave

Past President of the New Jersey State Association of Professional Engineers and Land Surveyors

THERE are a great many types of work which come under the classification and general heading of Public Works.

Public Works are performed through Federal, State and Municipal agencies. The larger projects, because of their magnitude and correspondingly great cost, are usually performed under the direct supervision of Federal or State Governments, or the governing agencies of the populous cities. The smaller projects are generally undertaken by the various branches of Municipal Government, representing political entities possessed of relatively small populations. It is interesting to note the various types of work carried out by these different governmental agencies.

Federal projects include river and harbor improvements, canals, dams and national parks. Under the State Public Works Programs may be listed highways, bridges, parks, canals, institutions and many more undertakings of similar nature.

In populous cities where the necessities of life have to be included in the schedule there are to be found such public works as water supply, sewerage systems, collection and disposal of garbage, subways, streets, sidewalks, parks, playgrounds, schools and other institutions.

In smaller municipalities and rural sections public works are undertaken and supervised by municipal governments and are quite similar to those undertaken by the populous cities, except that they are carried out on a smaller scale.

As a result of public works carried on by various agencies we have today a great nation in the process of development.

Years of research are, in some instances, necessary in order to properly and adequately provide the designs for engineering projects. In all construction problems, whether large or small, the skill of the engineer is required, and the utmost exertion on his part is necessary in order to produce for the general public the best possible solution of the said problem.

A check-up of the public works functioning today, devised and put into effect for the general good of mankind, would show that progress in this direction has endeavored to keep step with the requirements and needs of society.

In order to effect existing public works the expenditure of billions of dollars has been required. Through the expenditure of this money, manpower has been employed in ever increasing ways and usually by more or less steady employment over the years required to complete a project. The type of labor which has been required has been trained and skilled in the various classes of work called for under the Public Works Program.

Since the period of depression public works of all character have been curtailed. The labor ordinarily applied to this class of work has in a great many instances joined the army of unemployed.

Were industries operating in full force, or even substantially so, this type of labor would be able and willing to secure employment in the fields of industrial activity. Sad to relate, however, this is not the case. As a result the great division of the army so skilled has exhausted its means of livelihood and has been supported through the programs of made work.

In the adoption of a plan for the return of skilled labor to public works we are confronted with the problem of its application to the various classifications of work as outlined by federal, state and municipal governments. We are not only confronted with the problem of how best to use this type of labor but during a crisis of the present character we should select those things which will accomplish the greatest good for the greatest number. In considering this phase of the problem the quickest method for returning these workers to gainful pursuits should not be overlooked.

During this period of depression measures have been taken by the national government to keep intact all institutions performing public duties. Legislation has been enacted and aid has been given which in normal times would not have been necessary. These steps have aided and assisted the morale of a wonderful people who have been willing to stand the vicissitudes and ravages of destructive economic forces with a fortitude unparalleled by any nation in the world. The return to work of the skillful workers of the army of unemployed would be an encouragement not only to those who are benefitted directly but to the great mass of people who are looking so anxiously for the return of all unemployed to gainful pursuits.

A careful analysis would show that a policy of localizing work in the various communities throughout the length and breadth of the entire country would in a great measure add to these communities the needful and necessary public works which they now lack. It would also take from each community at least a portion of the skillful workers to the advantages of both the communities and the workers themselves.

Since construction work is in many localities seasonal there is the very vital element of time to be considered.

Those territories which are affected by frost have, to a great extent, a restricted construction season. This season usually starts in May and terminates in December. The remaining months of the year in a great many instances are not suitable for construction work wherein material is involved. It should be appreciated that the so-called construction season is fast approaching with but very little work in sight.

(*Continued on Page 14*)

The Future Standard Of Living Of The American Worker

By Rear Admiral Frederick R. Harris, Retired
Vice-President, New York State Society of Professional Engineers

AMERICANS today only too well appreciate what has happened to the high standard of living upon which they prided themselves and of which they boasted to the rest of the world. In the midst of the debacle, federal, state and other governmental agencies have attempted to preserve some semblance of these standards by insisting on retaining prevailing wage rates.

Keenly alive to the situation, but in dire distress, the nation is faced with the imperative needs of the moment—food and shelter with which to keep people from abject want. Much as America is concerned for the future, the insistent demands of today are so great that it must meet them, cost what it may. To accomplish this many remedies have been resorted to: unemployment relief, home relief and made work. Federal money has been poured into banks, insurance companies and other institutions to keep them liquid and solvent in order that people's savings, insurance policies and other things that represent security for the future might be preserved intact. The nation is concerned with measures involving capital reduction, forestalling of mortgage foreclosures, relief to the farmer and a myriad of other measures, each one a remedy of its kind forced on us by the necessities of the day. In order to live today, tomorrow must await its turn.

Americans are individualists, each concerned with his own work, business or profession. The problems affecting us as a whole are frequently not thought over or understood because they appear not to be important to the individual's particular affairs. As a nation Americans readily accept "slogans," catch-words and phrases of a euphonious nature which, through repetition, become fixed in the mind as facts. Let us examine some of them.

In spite of everything in the press to the contrary, this is an American depression. We have become familiar with the term "world-wide depression." In general, conditions in the larger European countries are not very much—if at all—worse than they have been at any period following the great war. In the last few years conditions in England, France and Italy have been better than at any time since the said war.

Other nations are suffering from the American depression because its business trouble has seriously curtailed the over one billion dollars a year that Americans sent abroad, spent abroad in travel, or invested in foreign securities. To this extent only is this a "world-wide depression."

It is agreed by all, that Government was extravagant, inefficient and cumbersome; that there was need for reorganization and economy. Savings of public money are desirable,—for the moment and even for the future when normalcy returns,—savings to cut extravagance and waste,—not savings on necessary and needed things that are essential to American progress. This truism is quite different from the slogan "balance the budget" because we must know that with diminishing returns from all kinds of taxes, and the demands on Government for relief measures, no budget can be balanced except by bookkeeping magic.

President Roosevelt, through his policy of reorganization and economy, expects to save over $800,000,000 in normal government expenditures, but spending money for unemployment relief, farm relief, Reconstruction Finance activities, public works and industry programs will call for over five billion dollars, so that the budget cannot be balanced.

"Inflation" such as the German post-war inflation where the mark went to nothing and all internal debts and obligations were wiped out is a disaster. The English "inflation" where the relation of the English currency is practically fixed and held at the desired value that English interests dictate to further British trade and domestic economy is a national benefit. Since it gives offense, let us drop the word "inflation" and use "stabilized currency." Stabilized on a parity with foreign currencies.

One hears a great deal about the "gold standard" and the financial press seems to be elated when the American dollar shows strength and foreign monies are weak. They should be distressed instead of elated. We cannot have revival until the £ Sterling goes to par with the dollar.

The "gold standard" myth is a figure of speech that has been serving foreign countries to good purpose and at the same time bringing about our undoing.

Those of the cities must realize that there is no chance for the revival of business and its attendant prosperity until the 30 millions of people of the Middle-West and the South, engaged in the production of world commodities, can sell these at a price above the cost of production. Otherwise, they will be unable to buy things at the country store, and these storekeepers, until their business revives, cannot buy from the jobbers and the jobbers cannot buy from the wholesalers and the wholesalers cannot place orders with the factories to start the said factories going.

The price of world-wide commodities is not fixed in the United States. Wheat, whose price bears a close relationship to the other grains, to beef, hogs, and divers commodities has been selling for about

(Continued on Page 14)

NEED FOR MUNICIPAL COOPERATION

As the Engineer Sees It

By J. Wallace Higgins

SOMEONE seventy-five years or more ago described the engineer, in substance, as one who can direct the materials and forces of nature for the use and benefit of mankind. The writer has seen no better general definition. The engineer, by his scientific training and experience has secured a partial control over natural laws and forces and has developed an ability to use them for the common good. Nearly all of those material things of which our modern civilization is so largely made up are the result of his investigations and efforts. Our buildings, our railroads and our ships, our automobiles and our airplanes, our highways and bridges, our sewers and water works, our factories and our mines, our electric lights, our telephones and radio,—all these are ours because certain men, engineers, have had the skill, the vision and the energy to devise and produce them.

To do this work effectively has required the development of skill along other lines than in the laboratory or on the drafting board. It has required the organization and training of men, the study of economic as well as of natural forces, and the cultivation of the arts of diplomacy in dealing with men.

Thus it appears to us that the engineer is fitted to discuss and should discuss problems of general and governmental policy as well as those of a strictly technical character, if he is to do his full duty to society. With this thought in mind our State Association of Professional Engineers, representing the profession in New Jersey, are sponsoring this series of broadcasts. We are endeavoring to discuss various topics in such a way that the listener will gain a little clearer idea of the fundamental principles of the varied problems considered.

In discussing "Cooperation" today, one may be pardoned for setting forth elementary facts.

An individual cannot exist as such without the cooperation of all the cells of his body, and of the various organs thereof. If certain cells decide they do not want to develop along cooperative lines, they run wild, develop a malign growth, and the result is cancer. If one organ does not do the work it is presumed to do and does not act in harmony with other organs, the individual knows it at once —he is *sick*.

The family and society at large cannot exist without cooperation,—without recognition of the needs of the "other fellow." Those who do not so act produce unhappiness and distress in those associated with them. Cases of extreme failure to cooperate for the common good are the criminals —these are recognized as enemies of society and they must be restrained for the welfare of all.

The same principles are involved when we consider the larger organizations of society,—the city, the state, the nation. Provision for the normal and orderly cooperation of these have been set up in our constitutions and laws. We have just lately been learning as a result of our sad experience, that nations, as well as individuals, must cooperate or the results are disastrous.

Truly, "no man liveth unto himself." The day of individualism is past; we are now facing, as we have never faced before, the immediate problem of national and local cooperation.

As has been noted the orderly and normal working out of the relationships of the municipalities to the larger units, the county and the state, has been set up in our laws. But cooperation means much more than that—more than the enforced relationships required by law. It means getting together in a spirit of friendliness and sympathy and working out such policies as may be to the advantage of the several municipalities involved in the discussion or for the general good of all, just as a party of men get together to discuss their individual problems. Each learns from the others' experiences, and any differences between them may be amicably adjusted. Out of this idea has grown the League of Municipalities to which I will refer later.

In recent years it has been found that municipalities can frequently cooperate to their mutual advantage by disregarding their own artificial boundaries and together planning developments for the future and constructing works which will better serve the whole than a series of individual constructions might do.

Out of this thought has developed the monumental "Regional Plan of New York and Its Environs" which, as is well known, is a general plan for the metropolitan area, involving the general design of highways, transit systems, architectural developments, zoning and innumerable other features. From this has also grown, stimulated by the foregoing, the New Jersey Regional Plan legislation, which authorized definite work along those lines. To this scheme many municipalities have objected, perhaps justly so, fearing the loss of local autonomy and identity. It may be that these plans are too ideal for the present. Perhaps, on the other hand, they contain so much of merit that they cannot be permanently cast aside, but await the day when better legislation and better times will open the way to general endorsement.

Many constructions have in recent years been carried out by municipalities acting jointly. Such

(*Continued on Page 15*)

LAND SURVEYING

Its Value and Importance to the Public

By Paul P. Rice

WHEN our forefathers reached these shores some three hundred or more years ago, they found between the seacoast and the Appalachians what they visioned as the Promised Land. Without appreciating the vast and rich Mississippi Valley, and the golden West beyond, they considered land was boundless and consequently of little value. History records numerous instances of the purchase of land now worth billions of dollars for trifling and insignificant sums. In 1626 Peter Minuit, Director General of the Province of New Netherlands, bought the entire island of Manhattan from the Indians for goods valued at sixty guilders (about $24.00). In 1931 this same area, now embraced within the City of New York, was assessed at $10,265,000,000.

In the comparatively short time of three hundred years, as the existence of nations is measured, the development of the country has exceeded the fondest hope and expectation of our ancestors. From a few small and widely scattered settlements along the Eastern seacoast, our country has grown to a world power of 123,000,000 people, the richest and most influential nation on earth. This progress is without parallel in all history.

Have you ever asked yourself what makes a country rich? Do you, as many of our citizens have done, more particularly and especially in the recent past, think of the wealth of the country as gold bullion stacked in huge piles in the United States Treasury, or other monies in the strong vaults of the banks throughout the land? Permit me to suggest the fallacy and the false reasoning of such a concept and at the same time to point out the real wealth of the nation. According to the 1922 figures (the latest available), our national wealth in billion dollars for various items was as follows: real property and improvements, 176; livestock, 6; farming implements, 2; manufacturing machine tools, 16; railroads and equipment, 20; motor vehicles, 5; street railways, 15; and all others, 80; for a grand total of 321 billion dollars. This is a staggering sum. At the same time, in 1922, our total money stock amounted to approximately $8,276,000,000. Thus it is evident that huge as our money stock is, it amounts to only about 2.5 percent of our national wealth. These figures are so large that their significance is difficult to grasp. In other words, if the total supply of money, as of 1922, were equally distributed to every man, woman and child living in the country at that time, it would have amounted to $76 and on the same basis a distribution of our national wealth would have amounted to $2,918 per capita. Money is but a convenient medium or means of exchange for real value. Could some unseen power suddenly remove or destroy the national wealth, leaving only our money, we would immediately be in desperate and dire circumstances for the lack of the necessities of life—food, raiment and shelter. However, should the reverse happen, that is, our money disappear with the national wealth remaining, we might be seriously inconvenienced, but the barter system would provide a means of exchange for goods as various cities and communities throughout the land are proving to themselves during the emergency created by depression.

Now let us examine the national wealth consisting of real property and improvements, livestock, farming implements, manufacturing machine tools, railroads and equipment, motor vehicles and street railways amounting to 241 billion dollars and 80 billion dollars for all other items. Does it not strike one immediately that real property and improvements are directly related with land, that livestock must have land on which to pasture, that farming implements must have land on which to operate, that manufacturing machine tools must be housed in buildings erected on land, and that railroads and street railways with their equipment as well as motor vehicles must have land or rights-of-way over which to operate. Land, therefore, is of primary and fundamental importance to our national existence.

A further consideration of the national wealth naturally causes one to ponder how this stupendous value was created. When our ancestors arrived, the painted savage stood on the shore and welcomed the advent of the white man. For goods and trinkets he parted with his land. For beads he bartered his furs. Over his trails, ever westward he led the pioneer. Close on their heels, struggling with rapids and cataracts, through forest thickets, over mountain barriers followed the surveyor with compass and chain at first and later with theodolite and steel tape. With each new frontier,—charts, maps and plans marked the white man's progress.

Monumented and chained the land was claimed. Settlers soon followed the trail blazed by the explorer and surveyor. Towns and cities came into existence, accessible by rivers and man-made canals. Overland, long ribbons of steel and fine improved highways connected the rapidly developing cities. Where Nature interposed barriers in the form of rivers they were crossed by bridges, whilst the mountains were pierced by tunnels. Great dams were built to impound waters for flood control, for water supplies for distant and populous cities and for irrigation, which caused grass to grow where none had ever grown before.

Out of the earth the sustenance of human life is obtained, out of the hills we quarry materials for our dwellings, and from the forests we secure lumber and other materials for a multitude of uses. Down into the bowels of the earth we penetrate for water, for gas and for oil which we require for drinking purposes, for fuel and for power. Across

(*Continued on Page 15*)

THE ENGINEER A PUBLIC SERVANT

Who Has Never Failed Society

By Herbert W. Heilmann

IN 1916, Dr. Frank Crane, author and widely known lecturer, in an editorial published in the N. Y. Globe, entitled "The Engineer," said in part:

"The man of the future is the Engineer. He is the man who can do things.

"Some day the nation will realize that it is continually in a crisis and that in peace as in war we need the highest order of efficiency and organization.

"We need the Engineer to arrange the transportation of people and goods from place to place without waste.

"We need the Engineer to get meat, bread and milk from the farm to the citizens.

"We need the Engineer to turn the profit of public enterprise toward building good roads and bridges.

"We need the Engineer to manage a city as economically and smoothly as if it were a manufacturing plant.

"The Official who will be forever indispensable is the Engineer."

What a challenge to be taken up by the Engineer of today. Can he declare without fear of contradiction that his predecessors have answered these needs of the public? Will a review of his present accomplishments further substantiate that he is carrying on the trust of a public servant with zeal and unselfishness? In answer to these questions let us consider individual comforts and privileges and our collective modern civilization.

Throughout every hour of the day, whether during work, refreshment or sleep, the Engineer is serving you. Before you arise in the morning, the systems of transportation, the construction and adequate illumination of highways and the use of the motor truck are responsible for the delivery of farm products. These are contributions of Transportation and Highway Engineers. The heating fuel, oil, gas or coal which brings a comforting temperature to your rooms in the crisp morning hours is available to you through research in the laboratory of the Chemical Engineer, whilst the operations in the field are under the guidance of the Mining Engineer.

Little thought is given to the extent of preliminary studies, diversified plans and ingenious construction necessary to permit you to turn on the faucet at will for an adequate supply of pure water. Yet, it is true that large water projects are from six to fifteen years in the making. In order that his fellow man be assured a continual and sufficient quantity of wholesome water, the Engineer assumes the responsibility to awaken the consciousness of the community long before the want is felt. In spite of serious criticisms and setbacks, he has persisted and the extensive water-works of the present day bear mute evidence of his wisdom and service.

Since civilization began the direct relation between health and pure water was apparent. The lack of a sufficient water supply was realized by the founders of Athens and as early as 600 B. C., severe laws were enacted regulating the delivery and consumption of water. About 115 A. D., the Emperor Hadrian constructed a truly remarkable aqueduct that bears his name. This system still serves the City of Athens. American engineers during the last few years have built extensions to this engineering achievement of their predecessors. The City of New York has its Catskill Water Supply, the City of Newark its Pequannoch and Wanaque Supplies, while the City of San Francisco receives pure water from sources beyond the deserts and mountains.

Public water supplies have been constructed throughout the United States in 4,363 municipalities having less than 1,000 inhabitants and in 6,265 municipalities of over 1,000 inhabitants.

At present the Engineers in the Metropolitan area are again seeking an additional supply of water which will be demanded within the next fifteen years.

At the breakfast table you unconsciously call upon the Electric and Gas Engineers to fry your bacon, toast your bread, percolate your coffee and aid in the preparation of other items of the menu. Through extensive power plants, you have the use of gas and electricity during the twenty-four hours of the day.

Whether you proceed to your office, factory or educational institution by private automobile, public bus, trolley car or aeroplane, the Transportation, Highway and Traffic Engineers guarantee a safe journey. The modern construction and maintenance of highways, bridges, tunnels and roadbeds, the comprehensive plans of traffic control, the definite program of snow removal and the development of airports, assure the traveler of a fixed schedule under all weather conditions.

The man in the office has a well constructed and air conditioned building in which to function. At his disposal are the telephone, telegraph and cable. Calculating, adding and listing machines increase his efficiency.

The man in the factory is surrounded by safety equipment, ventilating apparatus and up to date machinery which have contributed toward easing his burdens.

The work of the housewife is lightened by the use of electrical appliances, modern refrigeration, prompt deliveries of foods and commodities and the removal of rubbish and garbage. The service of the Engineer to the home is indispensable. Without it, the health, comfort and safety of our loved ones would be quickly undermined and destroyed.

(*Continued on Page 15*)

HEROIC DEATH OF ALFRED MASURY

Great Citizen and Engineer Dies In Service

Exemplified Highest Ideals

THE following short biography of a truly great citizen and engineer, Alfred Fellows Masury, who gave his life in the Akron Disaster, has been furnished by J. F. Winchester, a close personal friend of the deceased.

ALFRED FELLOWS MASURY

BORN SEPTEMBER 2nd, 1882
DIED APRIL 4th, 1933

It seldom befalls the lot of a man to become associated early in life with another and to follow with him through life a path that remains constantly of intimate interest to both.

Dame Fortune beamed upon the writer when she associated him with this noble character and afforded the opportunity to observe closely his sterling qualities.

When the hand of God saw fit to strike him down, while serving his country on board the U. S. Airship Akron, he passed from us in an heroic way that will emblazon his name for the veneration of future generations.

Words cannot add lustre to his fame or name; they can only record historical facts which should not be lost to the members of our Society. His is a record that should lend the consolation of pride to his friends and the urge of emulation to the young.

He, an early lover of outdoor sports, and the writer first met at a High School track meet, and one can still visualize his strong, sturdy body and ebony hair, as he, poised in the sunshine, stood ready to put the shot that gained credits for his team.

Some years later, after he had secured his degree and had become a designer, the association was renewed in a business way. Confidential experimental work drew us close together. This association developed into a personal intimacy. He confided the fact that he did not find himself or his work until his first summer vacation from Brown University when chance took him into the employment of a machinery concern. He then became thoroughly convinced that the world was not awaiting him or his degree with outstretched arms; but rather that it would be necessary for him to find his niche through hard work.

His first definite connection with the Vaughn Machine Co., Peabody, Mass., afforded ample opportunity to display his versatility,—leather working, printing presses, machine tools, cotton gins, internal combustion engines, automobiles and steam and gasoline trucks were among the varied types of machinery built, and no one more faithfully applied himself to the study of all types than did he.

Industry was at that time in a state of transition; the ten hour day was in vogue, the nine being advocated by labor, while industrialists were experimenting with piece work, bonus systems, and the Taylor, Emerson and Perrigo System of management. Ever a close student, he applied himself to the study of all.

He visualized the future of the automotive industry and attached himself to it. He helped design and construct the first steam truck in this country, viz., the Coulthard, at a time when rock maple wood blocks proved to be better tires than the rubber ones of that day.

He and Ralph Hood of Danvers, Mass., established themselves as pioneers in the development of the self-starting automobile. Their creation, the Gasaulec, was displayed at the early Boston Automobile Shows in Mechanics Hall. Considerably ahead of its time, public reaction was not favorable and the result was ultimate financial difficulty and discontinuance of the Gasaulec.

After the Vaughn Machine Co., he became associated with the Hewitt Motor Company, and specialized in heavy duty truck design. This company was the precursor of the present Mack Truck Co., with which concern he was identified for the remainder of his life.

Always a man of extreme modesty few knew that he had been commissioned a Lieutenant Colonel in the Reserve Corps of the U. S. Army until his title appeared in the newspapers at the time of his death.

Who, however, had ever earned such an honor more fairly? The creation of his brain, the Model A. C. Mack truck, was accepted by the world's outstanding engineering organization, the Army Engineering Corps, as its standard for the duration of the World War, and the fact that thousands of them were used by the A. E. F., was a testimonial to his engineering ability.

Drafted as a government civilian employee to direct the making of this product we find his fertile brain contributing liberally to the success of the American forces as well as to the creative efforts of the Mack Truck organization, of which he was Vice-President, Director and Chief Engineer.

His interest in all phases of military activity for the defense of the country never diminished. He studied carefully all engineering that related to mechanized forces and gave fully of his time and talents.

He was made the S. A. E. Chairman of the Ordnance Advisory Committee and contributed liberally to the development of the track crawler type of vehicle and the heavy duty units used in this arm of the service.

As a member of the Military Motor Transport Advisory Committee, of the S. A. E., he played an important part in the developing by the Quartermaster Corps of the first mechanized company

(Continued on Page 16)

General News And Comments

Informative Items

THE ENGINEER ADDRESSES THE COUNTRY

Nation-wide Broadcasts for American Legion—Society Vice-President, Admiral F. R. Harris Directs Programs

For some time past the American Legion has been conducting a series of nation wide broadcasts, over the leading radio circuits, as a part of its efforts to stimulate industry and to promote trade recovery and activity.

Some of the nation's most prominent citizens have availed themselves of this medium for bringing to the people their proposals for climbing out of the economic depression into which the world's richest state has fallen.

The legion has thus afforded a sort of public forum for the dissemination of ideas bearing upon the well being of the country. In doing so it has given the engineer an opportunity to carry to the nation his recommendations concerning the economic and social problems of the day.

The public generally has never given the engineer much recognition in the conduct of human affairs. In fact it has, more or less, been scornful of his opinions. This in the past could be accounted for by his reticence, natural or acquired. Of late however, there has appeared a certain antipathy, which is born of the caustic disseminations of financiers, economists, sociologists and psychologists whose attempts to evolve a science of human relations have met with disaster. Realizing that the engineer builds on or develops only from proven and tenable premises and knowledge, these somewhat discredited oracles of the 19th century appreciate that the successful methods of engineers must sooner or later find their way into the processes of thought that deal with human activities, and that the engineer himself must be more thoroughly integrated with, and become a directing influence in, human Society.

During the past two months several members of the New York State Society have been invited by the American Legion to address themselves to millions of American Citizens. Past Presidents Steinman and Sheridan and Vice-President Harris have been amongst the recent speakers over these nation wide radio hook-ups and the comments from auditions seem to indicate an interested public.

Admiral Harris, who is the newly elected Vice-President of the Society has been signally recognized by the American Legion in that he is now managing the broadcasting series, approving addresses, and selecting and presenting speakers.

Congratulations and best wishes are extended to this distinguished engineer of proven administrative ability.

'VOCATIONAL GUIDANCE IN ENGINEERING

American Association of Engineers Sponsors Work Directed by Dr. J. A. L. Waddell

A volume of unusual interest and merit, and bearing the title "Vocational Guidance In Engineering" has just come from the press.

Sponsored by the American Association of Engineers, and prepared by fifty-two distinguished American Engineers, under the direction of an Editorial Committee headed by Dr. J. A. L. Waddell, the work is perhaps the most comprehensive, and unquestionably the most authoritative, compilation of counsel and information for the benefit of layman and prospective engineer that has yet been published.

Every phase of engineering, its requirements, its problems and its rewards is explained in a frank and convincing manner by a separate author who, in each instance, is a recognized leader in the branch of the profession upon which he writes.

It is pleasing to note the lack of advertising and sales talk, as well as the absence of fantastic appeals to the romantic nature of youth, that so frequently accompany the bulletins of institutions of learning which appear more concerned with educating youth as a business than in developing possibilities for improving individual and collective human existence.

The work unhesitatingly points out the unattractive features of Engineering as a career and leaves no doubt in the mind of the reader as to the futility and impropriety of selecting engineering as a profession in the case of young men in whom strength of character, aptitude, love of learning and hard work are not inherent.

Throughout the various chapters which deal with the several branches and specialties there is a constant reminder that Engineering is one profession of which the subject immediately under discussion is but a part. This is commendable and should prove of great value not alone in advising youth but in educating institutional authorities and laymen to an appreciation of the solidarity of the profession.

The information contained, the style, the literary merit, the clarity of expression and the compactness of the work justify recommending the same to all who may be desirous of information upon the requirements and rewards of Engineering as a career.

Amongst the distinguished Engineers of international reputation who have collaborated in the making of "Vocational Guidance In Engineering" are Major Gen. Lytle Brown, Chief of Engineers, U. S. Army; Admiral Fred-

(Continued on Page 17)

COMMEMORATE BROOKLYN BRIDGE OPENING

Exercises and Dinner, May 24th

From the New York Times of the above date the following is quoted:

BROOKLYN BRIDGE 'OPENED' AGAIN AS SYMBOL OF 50 YEARS' PROGRESS.

Mayor Re-enacts Ceremony of 1883 as Planes, Ships and Fireworks Salute Parade—Growth of United States Hailed as Tribute to Roebling's Vision.

The roadway from Manhattan to Brooklyn was closed by a silk ribbon at the centre of the old Brooklyn Bridge for almost an hour at midday yesterday until Mayor O'Brien, escorted by a detachment of motorcycle police and a platoon of mounted men, ceremoniously advanced across the bridge and cut the ribbon.

Cameras clicked. Motion-picture film whirled. Two dozen firework bombs burst in midair. Half a dozen army and Naval Reserve airplanes swooped past. A signal bomb dropped from the bridge left a great trail of smoke. A marine parade of four beflagged Coast Guard patrol boats, a score of tugs and ten smaller craft, passing in review in the river below, saluted with whistles and sirens. Two fireboats spurted plumes of water almost up to the bridge.

Thereupon the Mayor, accompanied by Borough President Samuel Levy of Manhattan and a special ceremonial staff, proceeded to the Brooklyn end of the bridge where they were received by Borough President Henry Hesterberg of Brooklyn and John H. McCooey, Democratic leader of the Borough.

This was done in commemoration of the historic occasion fifty years ago when the entire city took a holiday and the Brooklyn Bridge was opened by President Arthur, Governor Cleveland and Mayor Edson of New York, who walked across the bridge to meet Mayor Low of Brooklyn, then a separate city, to emphasize the fact that the public for the first time might go afoot and dry-shod to Brooklyn—on a new bridge which was then one of the engineering wonders of the world.

In a world that has become accustomed to the airplane, the submarine and the radio, the emphasis yesterday was less on the engineering wonder than on the difference that the Brooklyn Bridge and fifty years had made in the importance of Brooklyn. The idea of having the celebration was credited to the Brooklyn Chamber of Commerce. It had the cordial cooperation of the city administration. It proceeded under the direction of Albert Goldman, Commissioner of the Department of Plant and Structures.

(Continued on Page 17)

EXAMINATION QUESTIONS

For License To Practice Engineering

New York—January 30th to February 2nd, 1933

Owing to the many inquiries resulting from the publication of examination questions submitted to applicants for license to practice professional engineering in New York, there is published here with the papers of the test held on January 30th and 31st and February 1st and 2nd last.

A number of correspondents have requested answers. The American Engineer wishes to advise that the Examining Board has not made public such information and that the propriety of doing so would undoubtedly be questionable. The magazine has, however, furnished additional copies to all who have requested the same and will continue to do so. Some correspondents have complained that mechanical, electrical or one of the other phases of engineering is being slighted in the examinations. Such is not the case. The correspondent has invariably read carefully the questions appearing in one issue and has neglected to do so in the case of previous or succeeding issues. If there appears to be a balance in the direction of what is generally termed civil engineering (the Editor contends all non-military engineering is civil) the same is occasioned by the requirement of law which specifically includes an examination in Structural Planning and Design as a qualification.

For details concerning the examination, interested persons are referred to Board of Examiners of Professional Engineers, State Education Department, Albany, New York.

Part I
MATHEMATICS
Monday, January 30, 1933—9:15 a. m. to 12:15 p. m., only

Answer any eight of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 Find the value of

$$\sqrt[5]{\frac{3.1416 \times 4771.2 \times 2.718^{\frac{1}{3}}}{30.13^{\frac{4}{}} \times 0.434^{\frac{1}{2}} \times 69.89^{\frac{4}{}}}}$$

2 At what price must 7% bonds, running 12 years, with the interest payable semiannually, be bought in order that the purchaser may receive on his investment of 5% interest semiannually, which is the current rate of interest?

3 The inside of a washbasin is in the shape of the segment of a sphere. The distance across the top is 16 inches and its greatest depth is 6 inches. Find how many pints of water it will hold, reckoning 7½ gallons to the cubic foot.

4 Two towns, 3 miles apart, are on opposite sides of a balloon. The angles of elevation of the balloon are found to be 13°-19′ and 20°-03′. Find the distance of the balloon from the nearest town.

5 Given a triangular piece of land. From one of the angular points, A, one line runs N. 25° W., distance 792 feet; another from the same point runs N. 42° E., distance 990 feet. It is required to divide this triangle into two parts in the ratio of 2 to 3, by a line running due east and west.

6 Give the equation of a circle passing through the points (4, 0), (0, 4), (6, 4).

7 In the parabola $y^2 = 4\,px$, an equilateral triangle is inscribed so that one vertex is at the origin. What is the length of one of its sides?

8 Give the equation of an ellipse which passes through the points (1, 4) and (—6, 1).

9 The area of a circular plate of metal is increasing because of expansion due to heat. When the radius passes through the value 2 inches, it is increasing at the rate of 0.01 inches a second. How fast is the area increasing?

10 A Norman window consists of a rectangle surmounted by a semicircle. Given the perimeter, find the relation of the heighth to the breadth of the window when the quantity of light admitted is a maximum.

11 A purse contains 9 silver dollars and 1 gold eagle; another purse contains 10 silver dollars. If 9 coins are taken out of the first purse and put into the second, and then 9 coins are taken out of the second purse and put into the first, which purse now is the more likely to contain the gold coin?

12 Determine the value of x from the equation $(0.4)^{-x} = 7$

Part I
APPLIED SCIENCES
Monday, January 30, 1933—1:15 to 4:15 p. m., only

Answer any eight of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 State Ohm's law in current electricity and give the units in which each quantity is measured.

2 What weight of oxygen will be required to burn to carbon dioxide 2000 pounds of coal containing 70% carbon? [Atomic weights: O = 16, C = 12]

3 A 500-pound cake of ice slides down an incline 60 feet long, which makes an angle of 30 degrees with the horizontal. Find the speed of the ice at the foot of the incline, assuming the friction to be negligible.

4 A steel rod has a length of 5 feet and a diameter of 1 inch at 0° F. How much will it expand if heated to 100° F.? How much force must be exerted upon the ends of the rod to prevent this expansion from taking place?

5 How many B. t. u.'s does it take to raise the temperature of one pound of water at normal atmospheric pressure (*a*) from 209° F. to 211° F., (*b*) from 211° F. to 213° F.?

6 State the principle of Conservation of Energy. Show how it applies to the case of a swinging pendulum with damped oscillations.

7. A cargo of 2 tons makes a boat sink 1.2 inches deeper in sea water whose specific gravity is 1.03. What is the area of the horizontal section of the boat at the water line?

8 An automobile weighing 4000 pounds acquires a velocity of 30 miles per hour in 40 seconds. Find the average horsepower developed by the engine, assuming the frictional forces to be 150 pounds and the acceleration to be constant.

9 What pressure will be required to pump water from a river into a tank on a hill 200 feet above the river, if 20% of the total pressure needed is used to overcome friction in the pipes? How long will it take a 10-hp. pump to pump 4000 cubic feet of water into the tank?

10 A rectangular gate 4 feet wide by 8 feet high stands vertical. It is hinged at its upper edge and is held in position by a single force F applied horizontally at its lower edge. Fresh water stands on one side of this gate 6 feet above its lower edge and on the other side 3 feet above its lower edge. Calculate the force F.

11 How may the rate of development of heat due to flow of electric current through a resistance be calculated? Specify the units used in your formula.

12 What substances cause hard water? Outline a process for softening hard water.

Part I
MATERIALS OF CONSTRUCTION
Tuesday, January 31, 1933—9:15 a. m. to 12:15 p. m. only

Answer any eight of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 What are the effects of carbon, silicon, manganese, phosphorus and sulphur on the mechanical properties of structural steel?

2 Determine the safe internal water pressure that can be carried in a riveted steel pipe having an inside diameter of 48 inches. The pipe is made of steel plate ⅜ inch thick and has an over-all joint efficiency in the longitudinal seam of 72%. The maximum tension at any point in the steel plate must not exceed 16,000 pounds per square inch.

3 State the principle of the water-cement ratio method of proportioning concrete mixtures. Describe how the principle would be applied in proportioning concrete for a given project. Assuming that the specifications require sound materials, write the necessary specifications for controlling the proportioning of concrete on a project by the water-cement ratio method.

(Continued on Page 22)

NEW YORK NEWS AND ACTIVITIES

T. Hayden Hamilton, Associate Editor

EDITORIAL SUGGESTION
For Metropolitan Chapters

Restless with improperly managed, and consequently expensive, municipal governments, a nation wide public is crying for respite from its taxes, local as well as national. Municipal management is largely engineering. Development, design, contruction and maintenance of highways, water supply, sewerage, disposal of garbage and wastes, management of public institutions, etc., are well within the province of engineering.

To date the engineer has occupied a subservient position, supplying support to political bosses, obeying their instructions in the face of his better judgment, and shrugging his shoulders at acts committed against the public,—all because it was not HIS responsibility and if he expressed himself it would cost him his job. Public indifference has now changed to bitter resentment and a voice raised offering a program of relief from present conditions will find a ready ear and prompt support.

The public is crying for help. It does not know that it is calling for the engineer and will not know until he sloughs off his inferiority complex and assumes the active and well informed leadership he is capable of offering.

The City of New York is in a ferment over charter revision with a view to reducing sinecures and graft. Proposals for new charters have been presented, mostly by lawyers. None of them designate engineers as commissioners to head the various engineering departments that only an engineer should direct. With a wealth of information to call upon from the vast number of engineers employed by the City, in intimate contact with and thoroughly aware of the political machinations and hopeless waste that is going on, is not this moment a marvelous opportunity to help the public and the profession and at the same time climb out from under the bushel and assume a direct and important responsibility in governmental affairs.

Committees could be appointed by each of the five Chapters within the City of New York to study and draw up a charter for the said City. Delegates from each of these Committees could meet in a main Committee to draw up a final proposed charter to be presented to the public by the profession.

Suppose such charter is defeated. At least the engineer will have had the satisfaction of having assumed a logical responsibility, by offering in the name of the profession, a constructive effort for public welfare and the public itself will be the better informed as to the justification for the engineer in positions of public trust.

New York Chapters—are you willing to seize this opportunity for public service?

T. HAYDEN HAMILTON

ANNUAL CONVENTION
NEW YORK, MAY 20th
Hotel Commodore — Scene of 1933 Meeting

Approximately 300 persons attended one of the most interesting meetings that the Society has yet held. Representatives from twenty Chapters ou of a possible twenty-five participated in the deliberations.

The sessions began with Committee meetings at 9:00 in the morning. At 11:20 A. M. President Steinman called the general meeting to order. A recess for luncheon which was attended by about 150 was taken at 1:15 P. M. After concise remarks and talks by the Past Presidents Welsch and Sheridan, Chairman Fred H. Zurmuhlen of the Arrangements Committee, incoming President Chapman, Vice-President Admiral Harris, Col. Reeves and Geo. Pegram, Past President of the American Society of Civil Engineers, retiring President Steinman delivered a short valedictory in which he indicated how much the Society has meant to him. His statement that no engineering organization has so strong an appeal to its members as has the State Society elicited a spontaneous outburst. Throughout his remarks there was manifest that sentiment which is the well spring of his convincing manner.

President Chapman referred briefly to the Society's accomplishments and expressed hope for its future. He appealed for support to carry on Dr. Steinman's work and to make effective the legislation enacted and the organization created through the efforts of his predecessors.

Admiral Harris, in referring to the economic problems of the day, pointed to the place of the engineer in rebuilding Society and expressed the opinion that the State Society was the model for a new national engineering influence that was on its way to recognition.

The meeting reconvened at 2:30 P. M.

After the report of Chairman Hickey of the tellers (who advised that all officers and directors appearing on the ballot had been elected and that the amendment to the constitution had been carried) was announced President Steinman presented each of the new Directors—Mortimer Y. Ferris of Essex County, Fred H. Zurmuhlen of Richmond County, Harold W. Watt of Westchester County, Charles W. Marvin of Monroe County, George W. Codwise of Ulster County, Werner C. Strecker of Schenectady County, Oscar A. D'Luhosch of Dutchess County Robert J. Bartley, of Suffolk County and Alfred E. Roche of Rensselaer County; the re-elected Financial Secretary, Ernest F. Fox; the re-elected Treasurer, Patrick M. Corry, and the

(Continued on Page 18)

RECENT ACCOMPLISHMENTS OF THE STATE SOCIETY
By D. B. Steinman, President

A record of achievement of the New York State Society of Professional Engineers was published in the January, 1933, issue of The American Engineer. Under the heading "What It Has Accomplished to Date," 37 items of accomplishment were listed. The following new items of recorded achievement may now be added to that list:

38. Through the final successful amendment of Section 300 of the Multiple Dwelling Law, the right of licensed professional engineers to file plans for multiple dwellings and any other structures, and alterations thereto, has been completely restored and legally establishd.

39. The provision in the licensing law restricting the use of the professional designation to licensed men has been amended so as clearly to protect the designations "engineer" and "surveyor," and not merely the designations "professional engineer" and "land surveyor."

41. The exemption permitting unlicensed men to make land surveys has been eliminated from the statute.

41. The exemption permitting unlicensed men to design buildings costing less than ten thousand dollars has been further restricted by the addition of a specification limiting the size of such buildings.

42. The minimum definition of "long established and recognized standing in the engineering profession," for exemption from the examination requirements, has been raised from 12 to 15 years.

43. The statutory provisions governing disciplinary provisions have been improved in effectiveness and have been amplified so as to permit the Engineers Board to recommend revocation, suspension or annullment of license, or reprimanding, censuring or otherwise disciplining violators of proper professional conduct.

44. The State Society has successfully cooperated with the Architectural Profession in securing the enactment of parallel desired amendments to the Architects' Law.

45. A proposed amendment to the Penal Law, redefining the practice of law in a manner which would have interfered with the rights of Engineers and Architects to prepare contract documents and to act as arbitrators, was successfully opposed.

46. The appointment, by the Governor, of two Engineers (members of the Society) to the high positions of State Industrial Commissioner and Deputy Industrial Commissioner, followed recommendation by the State Society.

(Continued on Page 20)

NEW JERSEY NEWS AND ACTIVITIES

Gerald W. Knight, Associate Editor

COMMENTS OF THE EDITOR

Unemployed and Conservation Camps

Some recent news items provocative of thought are: New Jersey can use 8,000 men in forestry work; various cities and towns are having difficulty in recruiting their quotas for Civilian Conservation Camps; large numbers of recruits at one of the concentration camps at military post go on strike because the potatoes are not thoroughly cooked and there is not sufficient variety of food; men from the eastern industrial areas and from some of the middle western agricultural sections refuse to work eight hours for $1.00 per day, plus clothes, lodging, subsistence, medical and dental attention, etc., even with sports and recreation added; some take stand that they did not propose to work and turn over to their families $25 of the $30 per month paid to them. There being no means for disciplining such men they are being sent home, after the government has spent considerable money on them. One wonders what some persons expect of government?

Further commentaries on this situation are:

Kansas relief units have decided to tighten up; no more relief for men who refuse to conform to conservation camp requirements. Says the army sergeant at one of the mobilization posts. "These civilians have it pretty soft, they get $30 per month; we get $17.50. I would like to have them in the army for a bit. They'd find out what real work was and some discipline wouldn't hurt them. They would eat the food that was served to them and they would take orders, and like it. They get the same food that we do." What is the answer? Algebra won't solve it. And so one hears of the reaction from some quarters.

The work of the conservation camps is probably more analogous to that of the farm laborer than to anything e'se. How does the pay compare? Does the average farm laborer get $30 per month and be completely found? He gets $25 to $30 per month plus board and lodging (of sorts) and nothing else; and he works.

State Forester C. P. Wilber is authority for the statement that New Jersey can use 8,000 men in its forests. He is reported to have told the Governor on April 10th that three camps of 200 men would be established, with a trained forester in charge of each. Engineers are to be borrowed from the Highway Department, as it is doubtful if foresters can be spared for full service.

The State Highway Department has its own work to do, and funds with which to do it.

The reforestation work is a project to alleviate unemployment. If engi-

(Continued on Page 24)

APPEAL TO CHAPTERS

Reports should be forwarded promptly.

Mr. Ernest F. Weeks, 200 East 5th Street, Paterson, and Mr. Trevor J. Powell, P. O. Box 212, Elizabeth, are the staff members to whom chapter reports should be submitted.

Hudson, Bergen and Morris counties did not respond last month for inclusion in the June Issue.

The cooperation of all chapters is expected and failure to forward promptly report of activities adds to the problem of editing and prevents dissemination of desired information.

* * *

SPECIAL NOTICE

Dramatized Episodes

"The Iron Horse" may be obtained by forwarding to Gerald W. Knight, 605 Broad Street, Newark, twenty-five cents and a self-addressed, stamped envelope. The fascinating recital of the dramatic scenes which accompanied the advent of the steam locomotive is most instructive and contains valuable food for reflection. History but repeats itself. Every engineer is invited to secure a copy.

* * *

EDITORIAL COMMITTEE

The New Jersey associate editor, Gerald W. Knight, requests the cooperation of the engineers of the state by sending to him news items of interest to the profession and any material that may be of value for publication.

Learn to write. Learn to speak. In these days of depression these are two things that every engineer should cultivate. You would be surprised to find out how well you can do these things if you try.

* * *

LEGISLATIVE ACTIVITY

The Legislative Committee reports that Senate bills 187 and 188, introduced by Senator Loizeaux of Union County, have passed the Senate and are at this writing in the Assembly.

Senate bills 95 and 96, introduced by Senator Durand of Monmouth County, for the abatement of pollution in New York harbor and coastal water enabling New Jersey to enter into a compact with New York and Connecticut, have not been moved beyond second reading in the Senate. It is expected that they will be passed upon third reading in the Senate and that they will be acted on promptly in the Assembly. It is hoped that all engineers in the three states of New York, New Jersey and Connecticut will use their good offices by assisting these bills through to successful passage.

In connection with the nomination of Mr. Clyde Potts by the Honorable A. Harry Moore, Governor of New Jersey, to a place on the State Board of Health, a hearing was held by the Judiciary Committee on the evening of May 22d.

LETTER FROM THE SECRETARY

New Jersey Association of Professional Engineers and Land Surveyors

In the April 10, 1933, edition of the Newark Evening News there appeared an article entitled "State Can Use 8,000 Men in Forests." The article was as follows: "Charles P. Wilber, State Forester, discussed with Governor Moore today plans for utilizing 8,000 men to be recruited from New Jersey by the Federal government for reforestation."

"Wilber told the Governor three camps would be established in New Jersey, each having a capacity of 200 men. In these, the recruits would be put through three weeks of hard training."

"A trained forester is to be placed in charge of each camp and engineers are to be borrowed from the State Highway Department. There was some doubt as to whether the Department of Conservation and Development could spare their foresters for full-time service in the camps."

"Wilber said the State owned 75,000 acres of land upon which the men could begin work and another 2,000,000 acres were available to the State at nominal cost."

As the work of reforestation is one of the President's plans to alleviate unemployment, it is evident that if any engineers are to be used on the same they should not be borrowed from the State Highway Department, but should be drawn from the hundreds of engineers throughout the State who are now unemployed. The work on the State Highways should continue, inasmuch as funds are available for this work, these funds being derived from the gas and license tax, for which the motoring public is paying.

If the work of reforestation is to be carried on in the state with the idea of alleviating unemployment, then only those engineers who are now unemployed should be used on projects connected therewith. They should not be borrowed from other departments of the State in which there is work to do. If the Department of Conservation and Development cannot spare its foresters on work which would be entirely beneficial to them, how can the State Highway Department lend men for projects which are entirely unrelated to their work?

ALBERT S. BLANK, Secretary,
New Jersey Professional
Engineers Association.

(Continued on Page 24)

The Nation Awakens

(Continued from Page 3)

Above all it would compel every American to bear his just and moral share of the nation's burden. In the face of constantly increasing evidence of tax evasion and immoral use of other peoples money upon the part of financial potentates in an hour when the country is engaged in a struggle to overcome an enemy from within, the time is propitious and the conditions sufficiently urgent to include the drafting of the nation's resources, in the same manner as were conscripted the lives of its citizens during the World War, as an emergency measure for overcoming the plague that has for the past four years stalked across these once prosperous United States.

Regardless, however, of the means of securing the levies required to execute the Public Works Program, the same must be prosecuted at all costs and the support of every American who would preserve his heritage of liberty, should be thrown at once and without equivocation into the breach. Whether one agrees with his policies or not none can gainsay the fact that President Roosevelt has kept faith, beyond any political leader of his generation. A new deal has come. Let us prove worthy of the courage and the love of mankind evidenced by this Moses who, regardless of the opposition of caste, station and power is determined to lead America, and God willing, perhaps the world, out of a wilderness of financial and social error into which the occidental nations have for more than a hundred years been penetrating deeper and deeper, until deprived of the light of common sense and moral understanding they now find themselves on the brink of chaos. Order is Heaven's first Law and the establishment of an orderly civilization is man's first duty. That the President of the United States may continue to see the light, as God gives him the light, is the prayer and hope of his fellow man throughout the world.

In the coming months and years the Engineer will be called upon to execute many if not most of the President's policies. That he will respond with his customary fervor, ability and unselfishness and that he will avoid the false gods of 19th century political economy and materialism are the hopes that spring from the hearts of all engineers who love,—not the profession less, but rather,—humanity more.

* * *

Public Works For Public Good

(Continued from Page 4)

It is therefore quite natural to presume that those agencies which can operate in the quickest manner are the agencies which should be considered first in outlining a program for public works. From past experiences and from present conditions it is quite evident that Federal agencies could quickly invoke some plan of putting into operation, projects pending. Such projects should be considered first. There should not, however, be overlooked the distinctive advantage of a localized improvement.

Means should be created during the present economic stringency to provide credit and finances so that such localized work can proceed. Projects involving the use of materials should be carried out on a competitive basis of bidding. This character of work would have a far reaching effect for it would not only put back to work the skilled labour but would also start the material industry producing the material required. Such procedure would also give to the great carriers of the country the business of transporting supplies of material.

If one were to believe that we are never coming out of this depression society would probably cease all types of public works construction forever. History shows that this is not the first economic depression the country has endured. We have survived the rest —we shall come through this. We shall again some day see the great army of workers happily employed in the pursuit of public works. Let us therefore start in a prudent and wise way to carry out those projects which are necessary for the good of mankind and in doing so not only provide work for millions skillfully trained in the trades of construction but likewise provide for mankind those indispensible factors of civilized existence,—public works.

* * *

The Future Standard Of Living Of the American Worker

(Continued from Page 5)

50 cents a bushel in Chicago. Allowing a few cents for transportation costs, the same price rules in Winnepeg, Canada and Liverpool, England. However, it costs something for handling and for freight to get the wheat from the farm in Chicago, so that even at 50 cents the farmer's price is not over 35 cents.

It is confusing to speak of Liverpool wheat at a price of 50 cents, because the Englishman reckons his price in his kind of money, namely 3 shillings. Were the English currency dollars and cents as is ours, 3 shillings would be 75 cents, and allowing 15 cents, charges for carrying, the Englishman would get 60 cents per bushel for his wheat, as against the American's 35 cents. There is little wheat produced in England and that is consumed locally. Canada is a wheat producing country. The Canadian currency is also at a discount to the American gold dollar. In addition, the Canadian wheat farmer gets the benefits of a bonus for wheat exported.

Foreign producers of commodities are making money. Americans are not. We are attacking this problem by putting a bandage on it, attempting to cure surface sores and symptoms. Restriction of home production will stimulate foreign production of the same things.

Of course, whatever is done must safeguard both the worker and the investor because the worker, if he is industrious and successful, eventually becomes the investor and when he does he becomes more conservative, less energetic and less industrious, so no plan can afford to forget either the worker or the man who conceives and manages things. Their ingenuity and energy are the basis of our national prosperity and future growth.

The next question is: What practical method is there at hand to achieve this stabilization of our currency with foreign currencies? Until the month of March there was none that was practicable. To invoke the constitutional provision which permitted Congress to fix the standard of currency was impracticable as it would have involved too much wrangling, debate and delay and would have invited further value deflation and business disaster, with speculation running riot. Now, through the initiative, energy and courage of the President of the United States, his proclamation, sustained by enabling Legislation, makes possible decisive and definite action—action as definite and effective as anything that can be done by the Bank of England. Government can regulate the relationship between the mythical gold dollar and our legal currency and this can be fixed overnight, daily, by tax or other means, so that the £ Sterling tomorrow could go to par with the dollar and other world currencies would follow suit proportionally.

Another of the fallacies that we hear is: that the Hawley-Smoot high tariff has an important bearing on the present situation. The tariff in most cases is based on the price paid for foreign goods imported. If this price, on account of the British currency stabilization—or inflation, if you choose to call it that, is 2/3, as it now is, the tariff or duty is also similarly reduced and thus in many cases importers bring foreign-made goods into our markets at a lower cost than can the American manufacturers.

American infant industries, American world industrial leadership, American high wage scales and standards of living were all reared behind a protective tariff wall. Our foreign competitors have at last found a way to overthrow this bulwark, and that way is, to regulate their currencies to such an extent that they can invade our markets and fix American prices of commodities and manufactured goods to the ruin of our own people.

It is true that our imports are small as compared to American goods consumed, but do not forget that the price at which an importer can sell foreign goods practically fixes the American price, that is, if the American manufacturer wants to sell his products. There is no doubt but that the continuance of this maladjustment of foreign currency values to our own, will destroy American industries, curtail American production to a minimum, destroy wage scales and continue to lower American standards of living.

The interesting part of the whole matter is that were such an adjustment in the relation of our currency to other currencies forced in the manner indicated, the United States would not have to attempt to dicker in world economic conferences, or barter private and public war debts owed to us for some measure of relief, but at one fell swoop would jump into the driver's seat, take the whip-hand and run its own affairs.

An even more interesting reaction would be that within a few months of forcing this adjustment the better part of the whole world would be again back on the so-called gold standard because keeping off of it would no longer secure to them the advantages that they have been enjoying, advantages—many of which have come to them through keeping this nation chasing that will-o'-the wisp, gold.

* * *

Need For Municipal Cooperation

(Continued from Page 6)

are sewerage and water works, garbage and refuse disposal, highways, recreation facilities. Notable are the Metropolitan sewerage and water works and park systems of Boston and of Milwaukee. Those works provide facilities for the many smaller towns which lie adjacent to the large cities above mentioned. In the metropolitan sections of New Jersey the Passaic Valley sewerage system and the joint sewers in Essex and Union Counties are cases in point. True it is, unfortunately, that not all of these have been executed without friction and some deserved criticism, yet the fact cannot be gainsaid that adequate works have been planned and built which could not have been so built without municipal cooperation. When we criticize, let us do so rationally and constructively, seeking ways for correcting procedures in the future, and not blindly condemn the whole system of cooperative construction.

Some of the other matters in which municipalities have profited by consultation together and by joint action are: matters of general policy, legislation, public health, policing, town planning, zoning, unemployment, and last but by no means least in these times, tax reduction. In all of these matters, individually we sometimes grope blindly for the best way out, but we have often found that by consulting with others who have similar problems, solutions are reached which are better for all parties. I have found that the representatives of any governing body are more than willing to discuss their practices and the results of their experiences along any line, where such information is desired.

In our own state of New Jersey there was formed some eighteen years ago an organization known as the New Jersey State League of Municipalities. Its birth and development came as the need of joint action and cooperation became manifest. The interests of the municipalities were common, their individual influence comparatively slight. Therefore the obvious thing was to get together and by united efforts win battles which would otherwise be lost.

The first and most evident work done by the League is in the matter of legislation. Too often in the past have laws inimical to municipalities been enacted, due to selfish interests, partisan consideration, or to ignorance on the part of the legislators of the problems in hand. It is the purpose and the work of the League to sponsor legislation which is desirable and to oppose that which has no merit or which is contrary to the best interests of the municipalities. As one instance of the result of the League's legislative activity I may mention the law enacted a couple of years ago whereby a portion of the gasoline taxes are distributed to municipalities to be applied to their own local highways. Moneys have thus come into local treasuries which they would not have received had this unitedly sponsored legislation not been enacted.

The League has done a vast amount of research work on the various phases of municipal affairs and maintains a Bureau of Information where the results of this work are made available to members of the League. Statistics on all branches of municipal work have been compiled and are available. General legal information is also given. At the annual convention there is an interchange of ideas on various topics and there are personal discussions of problems which arise. A monthly magazine of merit is published in whose pages are discussed various topics of moment to the municipalities and so information of value is brought to the attention of municipal officials.

The work above outlined has been of great value in the years it has been functioning, and this has been increasingly recognized. It has become a sort of clearing house for all difficulties. Problems are brought and discussed and we can get the result of the other fellow's experience. Perhaps his is the best way, perhaps ours. In any event a solution can be evolved as a result of conference which is perhaps better than any one individual's. The decisions may not be perfect but they are better for the exchange of ideas of trained minds or of those who have had to face these problems. United action can be taken which will be far more effective than individual action.

During the last few months differences have arisen in the organization of the league. This is to be regretted, but we may be sure that there must be great value inherent in the League or no one would be interested. Activity begets differences of opinion, and these are healthy. Without in any way taking sides in the matters of contention I want to say to the representatives of any municipality that if the League or its organization are not as you would have it, then by all means work to reorganize it, but, at any cost, *preserve it.*

I hope it has been evident from our little discussion that cooperation in all activities of life is essential to real progress; that non-cooperation is simply unenlightened s e l f i s h n e s s which defeats its own ends. Cooperation may and does promote and stimulate wise efforts, and on the other hand it checks or prevents extreme and ill considered actions. To insist on this need is not to say that all such municipal efforts are successful Some have, in the eyes of the public, been glaringly unsuccessful. Every effort of man may be similarly criticized; nothing is perfect. But so few have been the unsuccessful efforts that complete failure proves only that something was lacking in that particular case. It emphasizes the need of better methods or "team work" next time.

I want to quote the following from a recent statement by Governor Moore which is very pertinent and which contains great truth:

> "This present day will stand out as an epoch in the history of our country. Out of the distress of these times may come, and we hope will come, valiant leadership, an awakened public interest in government, a deeper sense of responsibility on the part of office-holders, and an appreciation of our dependence upon each other —not merely our dependence as individuals, but the interdependence of political sub-divisions and the State and Nation."

As engineers we recognize that in these troublous times we are fighting a war—more prolonged and more deadly than we have ever known. Individually and alone we can do but little to combat the foe and fight our way back to economic strength; but together, men working with men, municipality with municipality, state with state, and—yes—nation with nation, we can and will conquer. Let us apply every bit of our strength and our energy, our knowledge and our training to this end.

* * *

Land Surveying

(Continued from Page 7)

the fertile fields the farmer casts his seeds and harvests his crops. On the earth's fair face graze the docile flocks and herds. Food, raiment and shelter for all mankind are taken in some manner from the land. Thus, in the land and the uses we make of it lies our national wealth.

The next time you can spend an outing on hill or mountain top, remember that the expanse of land that stretches before you is ours because years previously some surveyor with herculean effort and unfaltering courage penetrated into the unknown to bring back to civilization a map or chart showing the boundaries and natural resources of the region. Remember, also, that the improvements you will see in cities, towns, buildings, railroads, highways, canals, bridges, and a host of other objects from the foreground to the distant horizon, are the handiwork of the engineer based upon the accurate measurements of the surveyor.

Comment: For details of figures quoted above the reader is referred to the author—c/o of the American Engineer.

* * *

The Engineer a Public Servant

(Continued from Page 8)

The devastating effect upon civilization of an inadequate disposal of garbage, rubbish and sewage was experienced during the past. We read of the regulations imposed upon the children of Israel by the Patriarchs of old. The Black Death, the Malaria epidemics and the many lives claimed by the jungles and swamps of our own Southland were due entirely to unsanitary conditions existing at the time. The construction of plants for the disposal of garbage, rubbish and sewage, the extermination of the mosquito and other disease bearing in-

sects by proper drainage of low lands, have not only lowered the death rate, but have made possible further advancement in the accomplishments of our Nation. An example is the completion by the American Engineers of the Panama Canal. Only after the destructive forces of nature were destroyed through the activities of the Sanitary Engineer could his fellow workers bring to fruition the dream of many years.

Today the Engineer has perfected the method of rubbish and garbage disposal to such an extent that incinerators are located in many of our Cities adjacent to residential areas, hospitals, schools and recreational centers without complaints of any kind.

If the Engineer has done nothing more than to harness these potential devastating influences upon mankind, his claim to service cannot be denied.

When we travel in all directions, across the continent if we desire, few of us give thought that the present systems of super-highways, tunnels and bridges are due to a steady development. In order that the Emperors of Ancient Rome could transport armies, the engineers of that day built the Appian Way. Portions of this road are still in use. Following the surveys of Washington and other early engineers, the mountains of our country were crossed by roads and railroads built through the wilderness. In our present day the accomplishments of the Highway Engineer were responsible for the safety of Paris during the great War. Without its system of roads the history of France and of the World would have been different. Remove from our present day the properly maintained highway and civilization would go backward.

In this age, the need of the Engineer is more keenly felt. We improve our communities by sane zoning and planning, building and sanitary codes and similar regulation of the use of land and buildings. The extension of parks, playgrounds and similar recreational facilities, the assurance of adequate light and air are among the chief concerns of the Planning Engineer. Many cities are adopting Master Plans showing the desirable development for the next twenty years. The layman has also come to the conclusion that foresight is required to eliminate mistakes in future city expansion.

The Engineer has been called upon to assume the duties of City Manager. In this capacity he combines executive and engineering skill. The success of the City Manager form of government has been proven by the fact that of 6,251 incorporated places of over 1000 inhabitants in the United States 421 are now operating under this form of government. What is more striking is that of the 376 communities of over 25,000 inhabitants. 81 or more than 1 in 5 have City Managers, a large majority of these being Engineers. During our present generation, a young engineer stood upon the bleak coast of New England. He had erected an electrical sending set. On the coast of Great Britain stood another engineer with similar equipment. At an appointed time the man across the sea sent a message into the air. It was received by his comrade on this continent. Marconi had harnessed the ether waves of space and the RADIO was born. Just another contribution by an Engineer. Yet words cannot express the influence for good which that service has given this weary old World. In my opinion the magic of Aladdin's Lamp fades before the power of the Radio. It, and the aeroplane, are responsible for the removal of the barriers of time and space and nations and individuals have found in the radio the real ambassador of good will.

During 1932 we have witnessed the completion of the Washington Bridge. It followed the Camden-Philadelphia Bridge, the Goethal's Bridge and the Outerbridge Crossing. In each the Engineer has combined artistry with structural details. Each is an expression of the dreams and accomplishments of public servants.

These are some of the services rendered by the Engineer of the past and the present. The Engineer will go on through the ages overcoming obstacles, conquering new forces and reshaping the physical world. Greater responsibilities will be thrust upon him. Unsparing of his energy he will continue to plan and toil, to create comfort, wealth and happiness for fellow wayfarers. In truth he is the pioneer, the leader and, "The Public Servant" in the onward march of civilization.

* * *

Heroic Death Of Alfred Masury

(Continued from Page 9)

intended to displace cavalry. In the first review of that force held at Fort Eustis about two years ago, he remarked, "It is regrettable that the average civilian and politician do not recognize the full importance of the advances made in motor transport since the World War. It handicaps our preparedness and imposes an unnecessary hardship upon our army personnel who have to struggle along and experiment with designs of the World War Period."

His untimely end broke an appointment to visit the Aberdeen Proving Grounds to witness the test of a creation of outstanding value, which he had recently submitted to that point for test.

His versatile mind and talents broadened with time. The engineering organizations listed below, of which he was a member, testify to his many varied activities:

American Society of Civil Engineers.

American Society of Mechanical Engineers.

American Institute of Electrical Engineers.

Society of American Military Engineers.

New York State Society of Professional Engineers.

Society of Automotive Engineers.

Institute of Automobile Engineers—England.

Permanent International Association of Road Congresses—Paris.

American Society of Municipal Engineers.

U. S. Naval Institute—Associate Member.

Sons of Union Veterans of Civil War.

American Association for the Advancement of Science.

American Petroleum Institute.

American Road Builders Association.

Army Ordnance Association.

Institute of Metals.

Royal Society, Arts & Manufacturers & Commerce of London.

He was no mere joiner. His association with an organization was an implied tribute to its work and its efficiency.

He had many friends in the Petroleum industry and he took a particularly keen interest in the activities of the American Petroleum Institute.

While he always was greatly interested in aviation, he confided to the writer that Anton Fleckner of Rotor Ship fame, whose acquaintance he made in 1926, stimulated his interest in the principles of aerodynamics, which were always intriguing to him.

While a constant devotee of aviation and a user of it for transport purposes, lighter-than-air craft appealed strongly to his inquisitive mind. His first flight was made in the Los Angeles at Lakehurst, N. J., after months of persistent effort to obtain official permission. He pictured in no uncertain terms his opinion of its potential value for war time and commercial purposes.

Truly a pioneer, he never shirked his duty when he thought a contribution could be made to the advancement of science. His experience as a passenger on the Graf Zeppelin when it was buffetted around Europe and forced to return to its base, acquainted him with, and impressed upon him the hazards of aviation, particularly in the case of lighter-than-air craft, yet the pleadings of his friends to pursue less hazardous studies remained unheeded because of the Viking spirit he possessed. At the time of his death he had probably travelled upon a greater number of air-transport types than any other civilian.

His attendance at track meets, golf, boxing and racing affairs, testified to his love of sports. He was tolerant toward all of them, but his greatest recreation came from his association with his principal hobby—boating. One can see him years ago in his first boat, a Gloucester Dory fitted with a kerosene engine, deriving pleasure on the waters surrounding the rugged New England Shores, and again on the last, the "L'Apache," a luxurious yacht, frequently seen in the various waters of New York and vicinity, on which he found rest and happiness with his family and friends.

The list of his clubs noted below, distinctly indicates his choice of recreation activities:

New York Athletic Club.

North American Yacht Racing Association.

Port Washington Yacht Club.

Cruising Club of America.

Montauk Yacht Club.

Too frequently we in engineering circles judge our associates by their failures in one endeavor or another. That is a prevalent human fault. He was ever tolerant, generous and sympathetic. Human dust like all of us—if he ever strayed from the teachings of his noble mother who survives him, he promptly charted his course

along the path of the fundamental thoughts which dominated his mind. "Have I been unfaithful in dealing with others? Have I been untrue to my friends? Do I practice what I preach? In learning and straightway practicing—is there not pleasure also? When friends gather around from afar, do we not rejoice? Whom lack of fame cannot vex, is not he a gentleman?"

Such were the thoughts that created for him a happy family life, that enabled him to count among his friends the thousands whose names appear upon the rosters of the organizations to which he belonged, enabled him to associate most intimately with the world's outstanding scientists, industrialists and government officials who ever sought his advice and guidance.

He lived a full life—his sales ability and practical contact with everyday life enabled him to impress his associates with the current developments of his brain; many of them have been applied and are accepted as commonplace in the construction of automotive equipment which is working on the highways and byways of America and the world.

Knowledge passed along to mankind by such pioneers is unto itself a monument. His contributions to the engineering world will be utilized for the benefit of humanity and the glory of his country long after many of us have been forgotten.

His untimely end brings grief to all of his associates and intimate friends, but consolation and pride in that he died a hero in the service of his country so that his manly qualities and accomplishments will forever be enshrined in the hearts of his fellow Americans and fellow Engineers.

To conform to his oft expressed wish for such a resting place, his remains were taken from the Brooklyn Navy Yard on the U. S. Coast Guard Cutter Champlain to the spot where life had been cut short. There were conducted simple services and his ashes scattered to the four winds and to the sea, whilst his departed spirit doubtless looked on, full in the faith that death for him was but the gateway to an eternity of opportunity.

J. F. Winchester.

Comment: The Society mourns the loss of its distinguished and heroic member. At the recent annual meeting an appropriate resolution expressing sorrow, and sympathy to his bereaved wife, was adopted. The same appears elsewhere in this issue.

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General News and Comments

(Continued from Page 10)

COMMEMORATE BROOKLYN BRIDGE OPENING

Former Governor Alfred E. Smith was the principal speaker at a dinner celebrating the anniversary at the Hotel St. George.

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Other speakers at the dinner were Mayor O'Brien, Mr. Hesterberg, the Rev. Charles W. Roeder, chaplain of the Society of Old Brooklynites, and Dr. Palmer C. Ricketts, director of the Rensselaer Polytechnic Institute of Troy, where Washington A. Roebling, son of John A. Roebling, went to school.

COMMENT:—Can one imagine celebrating the anniversary of the discovery by Harvey of the circulation of the blood or commemorating the issuance of the Code Napoleon with but one out of a half dozen speakers a doctor or lawyer respectively?

The Brooklyn Bridge inaugurated an era that has developed the art of bridge building to a point undreamed of even when thoughts of airships held forth in the minds of imaginative men.

Either the public is forgetful or the profession neglectful of its obligations to properly recognize the authors of great engineering events that have changed humanity's course.

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REQUESTS AND COMMENTS FROM AFAR
Hawaii and California Correspond

Some evidences of the reactions to the Society's policies and activities may be noted from the following:—

April 17th, 1933.

The New York State Society of
Professional Engineers, Inc.
Grand Central Terminal Bldg
New York City.

Gentlemen:—

The article by Dr. D. B. Steinman on "Registration of Engineers" recently issued by your Society in pamphlet form is the best and the most comprehensive we have yet seen on the subject. Coming from Dr. Steinman it could not be otherwise.

It is so good that our Board would like to have about 200 copies for distribution to its registrants and to others. We, of course, want to pay for them. Please let us know what the charge will be for 200 copies. Aren't you receiving requests from other registration boards for copies?

Yours very truly,
Territorial Board of Registration
for Professional Engineers,
Architects and Surveyors.
By Wm. C. Furer,
Secretary.

State of California
Department of Professional and Vocational Standards State Board of
Registration for Civil Engineers
835 Forum Building, Sacramento

April 25, 1933.

Mr. Arthur V. Sheridan, Editor
The American Engineer
Postum Building
250 Park Avenue
New York, N. Y.

Dear Sir:

This office has just received a copy of the April issue of your extremely interesting publication, The American Engineer.

On page 14 of the April issue is a concluding article on EXAMINATION QUESTIONS For License as P. E., State of New York. The Board of Registration for Civil Engineers would be very glad to receive the previous issues of this magazine containing the balance of this article, if it is possible for you to send them, or to receive merely the pages containing the examination questions torn out from the back issues.

Yours very truly,
STATE BOARD OF
REGISTRATION FOR CIVIL
ENGINEERS.
By Pecos H. Calahan,
Asst. Secretary.

* * *

Vocational Guidance in Engineering

(Continued from Page 10)

eric R. Harris, Retired, U. S. Navy; Dr. William Bowie, Chief, Division of Geodesy, U. S. Coast and Geodetic Survey; John F. Coleman, Consulting Engineer and Past President of the American Society of Civil Engineers; Dr. Robert Ridgway, Chief Engineer, Board of Transportation, New York, also Past President of the American Society of Civil Engineers; Prof. Alexander Klemin, Director of Aeronautics, New York University; Dr. J. A. L. Waddell, Bridge Designer; Edward Wegman, famous Builder of Dams, and many others of like calibre.

The writer strongly commends the work to the attention of educational authorities, students and others interested in learning about the profession of Engineering, or in directing the selection of a career for a youth whose inherent qualifications justify choosing the difficult but satisfying profession wherein he gains most out of life who serves best the interests of human society.

The book, which has been published by the Mack Printing Company of Easton, Pa., contains 560 pages. Its price is $2.50 in the U. S. A. and Canada and $2.00 when ordered in quantities. Copies may be obtained by addressing the American Association of Engineers, 8 South Michigan Avenue, Chicago, and from the printer.

Editor.

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AMERICAN SOCIETY OF MECHANICAL ENGINEERS
Chicago—June 26th-30th

The semi-annual meeting of the Society will take place in Chicago during the last week in June.

A brief outline of the several days' sessions are as follows:

Monday, June 26th: Aeronautic Session I; Printing Session I; Fuels Session I; Machine Shop Practice I; Plastic Information—Iron and Steel And Applied Mechanics Divisions; Railroad Research Session I; Boiler Feed Water Session; Iron and Steel; Education and Training.

Tuesday, June 27th: Aeronautic Session IV; Printing Session III; Fuels Session III; Machine Shop Foundry Session; Mechanical Springs Session; Applied Mechanics; Process and Grinding Session; Smoke Abatement Session—Fuels IV.

Thursday, June 29th: Industrial Power Session; Hydraulic and Water Power Session I; Applied Mechanics and Structural Session I; Management Session; Process Session.

Friday, June 30th: Central Station Session I; Hydraulic and Water Power Session III; Applied Mechanics and Structural Session III; Wood In-

dustries Session I; Wood Industries Session II; Econometric Society Session.

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AMERICAN SOCIETY OF CIVIL ENGINEERS
Chicago, June 26th-30th

An annual meeting of the Society is scheduled for June 27th, 28th, 29th and 30th. The Board of Direction will hold a quarterly meeting on June 26th.

A brief summary of the program follows:

Tuesday, June 27th, 1933: Annual Convention.

Wednesday, June 28th, 1933: Joint Engineering Day at Century of Progress Exposition.

Thursday, June 29th, 1933: Technical Division Sessions.

Friday, June 30th, 1933: Technical Division Sessions.

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New York News and Activities

ANNUAL CONVENTION

(Continued from Page 12)

new Vice-President, Frederic R. Harris. He then appointed Past Presidents Welsch and Sheridan to escort the new President, Arnold G. Chapman of Albany, to the dias. Throughout the remainder of the meeting, which adjourned at 5:15 P. M., President Chapman presided.

During the morning session reports and recommendations were presented by the President, Financial Scretary, Treasurer, the Chairmen of Legislation, Membership, Ethics and Practice, Publicity, Publication, Chapter Activity and other permanent Committees.

President Steinman reviewed the activities of the Society during the past three years and pointed to the success of its undertakings,—legislation, membership, publicity, magazine and other endeavors,—as an index of the justification and need for that type of organization which is composed of units representative of political subdivisional entities.

According to Chairman Chapman the recent legislation was accomplished more easily than previous programs because of two factors: 1st, the reputation and strength of the Society; 2nd, the amity between Architects and Engineers resulting from the agreements reached last year.

Chairman Zurmuhlen, of the Membership Committee, reported that within the last few weeks an additional Chapter had been formed, another was in the process of formation and still others are being planned. A truly remarkable organizer is Fred Zurmuhlen. He has set a record that will probably remain unchallenged.

Chairman Sheridan, of the Ethics and Practice Committee, recommended amending, at the appropriate time, the law so as to set up a Code of Ethics, the violation of which would serve as a grounds for reprimand or suspension or revocation of license. He also strongly urged that, as is the case with other professions, corporations, excepting those in existence at the time of passing an amendment to the law, be prohibited from practicing engineering as corporations.

Chairman Van Wagner, of the Publication Committee, appealed for support of the American Engineer and urged all Chapters to seek to expand its influence and increase its sources of revenue.

Raphael J. Smyth presented an interesting account of the accomplishments of the Committee on Chapter Activities. Any person doubtful of the effectiveness of the Chapter form of organization would be greatly enlightened by reading this report, a copy of which should be forwarded to every Chapter.

Financial Secretary Fox outlined the growth of the Society and called attention to the fact that despite conditions it has never ceased to grow. The present enrollment as of May 1st is approximately 2400 as against something less than 2100 at the same time last year. He appealed to members and to Chapters to remit dues, calling attention to the fact that despite the increased membership collections are behind those of last year. The work of Mr. Fox was warmly commended.

Treasurer and the affectionately termed "Watch Dog of the Treasury" Corry reported a substantial balance at the conclusion of 1932. He presented a complete accounting for all monies and stressed the need for expediting the transmitting of funds to Headquarters. As in the case of the Financial Secretary, Mr. Corry was highly praised for his unselfish work in behalf of the Society.

After the induction of President Chapman, the Committee on Resolutions, through Chairman Sheridan, presented its report. The subjects of the several resolutions and the actions thereon are appended .

Additional resolutions offered from the floor dealt with:—the selection of engineers and contractors to carry out the public works program, on a fee basis; the acknowledgment of the services of legislators and officials approving the recent society legislation; commendation of the President of the United States for selecting an Engineer, President Morgan of Antioch College, as head of the Tennessee Valley Project; the modification of the Constitution of the Society so as to make the legislative Chairmen of Chapters members of the legislative Committee of the Society. The first of these was, after lengthy discussion, voted down; the second and third were approved and the fourth was disapproved.

A report of the special committee appointed to advise concerning the removal of Society headquarters to Albany was presented by Chairman Corry. The report which recommended establishment of headquarters at Albany and abandonment of the New York office was discussed at length and disapproved. A resolution of recommendation to the effect that the Executive Board, which has jurisdiction, called for the continuance of the headquarters in New York.

Various other matters were presented for discussion. A cablegram of hope to Senator Desmond, whose wife was ill in the Bahama Islands, was dispatched.

Upon adjournment Little John Avery, President of Westchester Chapter and Permanent Dispensor of Good Cheer, led those present back to the customary committee room where the Stein Song succeeded discussion as the order of business. Later John headed some visitors on a trip of inspection through the New Roxy Theatre—lodged in the midst of Rockefeller Center.

All in all, it was an outstanding affair and a splendid meeting, principally because of Fred Zurmuhlen and his Committee which consisted of Messrs. P. M. Corry, Thos. H. Normile, Ed. G. McCormick, George B. Meeteer, Ernest T. Neuschwander and Roy C. Cram. To these men the American Engineer expresses appreciation in behalf of those present.

A meeting of the New York State Society is worth while professionally and socially. Ask some one who has attended.

* * *

RESOLUTION

Advocating Public Works and Approving President's Proposals.

WHEREAS, the recognized doctrine that government exists for the people, rather than the people for the government, makes the minimizing of want and suffering a governmental obligation, and

WHEREAS, the balancing of budgets and other measures, already attempted, admittedly desirable and useful for the establishment of credit in the eyes of individuals and groups capable of lending money to governmental agencies, cannot per se distribute relief to or create employment for the millions of persons lacking the necessities of life, and

WHEREAS, it is illogical to contend that revenues, predicated upon collectible credits, incomes and salable commodities, can be equated with expenses (which, in the ordinary course of events, are contingent upon an ever increasing population and civilization), whilst the masses of the nation grow poorer and poorer, and

WHEREAS, the distribution of wealth is inseparable from the welfare of any nation, and

WHEREAS, the accomplishment of an equitable distribution through the medium of creative labor is unimpeachable, and

WHEREAS, the construction of public and private projects predicated upon the engineering knowledge and skill is the most definite and justifiable means of improving land, of creating and distributing wealth and of increasing governmental revenue, and

WHEREAS, the engineering profession is a unit in believing that employment is the one and only remedy for the suffering and privations of millions of American citizens who seek their inherent right to labor in order to live, now therefore be it

RESOLVED, that the New York State Society of Professional Engineers, in meeting assembled, New York, May 20th, 1933, does again urge upon the nation an appreciation of the incontrovertible economic philosophy that only through the medium of universal opportunity for labor can a people be prosperous and contented, and be it further

RESOLVED, that the Society does strongly recommend to the people of the State and the Nation approval of the legislative proposal of the President of the United States and the Senator from New York, the Hon.

Robert Wagner (which proposal is known as the Public Works Program and which is now before the Congress) and in so doing urges united support upon the part of the people of America to the end that the proposal may be speedily translated into action.

RESOLUTION
Administrator of Public Works Should be an Engineer.

WHEREAS, the President of the United States, through Senator Wagner of New York, has proposed to the Congress the authorization of a Federal Public Works Program for the creation of employment and the development of the nation, and

WHEREAS, the consummation of these objectives, to be entrusted to the direction of a Federal Administrator of Public Works, is primarily an engineering problem of the highest magnitude, now therefore be it

RESOLVED, that the New York State Society of Professional Engineers, in meeting assembled, New York, May 20th, 1933, recommends to the President of the United States the advisability of appointing an Engineer of recognized capacity as Federal Administrator of Public Works, and the selection of engineers of like qualifications as State Administrators of Public Works, and be it further

RESOLVED, that the Society recommends to the Governor of the State of New York, and to the chief executives of various subdivisions thereof which will prosecute projects made possible by federal aid, the justification for selecting professional engineers as administrators of public works.

RESOLUTION
Use of Private Capital for Public Improvement Projects.

WHEREAS, the New York State Society of Professional Engineers, in meeting assembled, New York, this 20th day of May, 1933, has declared its belief that a speedy and adequate means of ending the depression and relieving unemployment is through extensive programs of construction, and

WHEREAS, the program proposed by the Federal Public Works measure, whilst assuring material relief, will not of itself eliminate excessive unemployment, and

WHEREAS, the right of mankind to a livelihood is paramount to all other considerations, now therefore be it

RESOLVED, that this Society hereby records itself as being in favor of permitting self-sustaining and self-liquidating improvement projects to be constructed by private capital under an arrangement whereby the companies constructing the improvements will be reimbursed for their actual and supervised services, plus a reasonable percentage for profit and interest on their investment, and through proper amortization these improvements will be returned at the end of a predetermined period to the proper governmental agencies, and be it further

RESOLVED, that copies of this resolution shall be forwarded to the proper Federal, New York State and City governmental agencies, with the formal request that consideration be given to the immediate starting of extensive construction work through the medium of private capital.

RESOLUTION
Brooklyn Bridge Ceremonies

WHEREAS, the announcements inviting engineers and citizens generally to participate in ceremonies to be held on Wednesday, May 24th, in commemoration of the opening of the Brooklyn Bridge, indicate that but one engineer has been invited to speak upon this great engineering accomplishment, and

WHEREAS, the engineering profession today numbers amongst its practitioners many internationally famous designers and builders of bridges whose culture, training and experience particularly recommends them for commentary upon the great bridge which has so long served and made possible the magnificent development of the Metropolis, now therefore be it

RESOLVED, that the New York State Society of Professional Engineers expresses regret at the failure to accord appropriate and adequate recognition to the profession of engineering in the formal commemoration of the 50th Anniversary of the consummation of one of the greatest feats in the history of mankind and the opening of an era of unlimited possibility in one of the most highly developed branches of engineering, the art of bridge building, and be it further

RESOLVED, that the New York State Society invites the attention of public, press and civil authorities to the injustice and impropriety of commemorating the anniversary of the completion of the Brooklyn Bridge, a magnificent engineering accomplishment, without due acknowledgments to its creators, and with commentators who, regardless of position in civil life, can, with but a single exception, scarcely qualify as chroniclers or exponents of engineering contributions to the welfare and progress of human society.

RESOLUTION OF ACKNOWLEDGMENT
To Architectural Profession

The Entente Cordiale, between the architectural and engineering professions, established in 1931 by the respective New York State Boards of Examiners for Architects and for Engineers, the New York State Council of Architects and the New York State Society of Professional Engineers, made possible the enactment of recent legislation sponsored by and in the interests of both professions and conducive to public good. This is especially pertinent to the amendment to Section 300 of the Multiple Dwelling Act, which amendment, through the courteous co-operation of the Architectural profession as above noted, restored to the Engineer his right to act as a principal in the preparation and filing of plans for multiple dwellings. The two professions are now in all respects equal before the law and the practitioners thereof, through the requirements of training and experience exacted of each, qualified to act as principals in the safeguarding of life, health and property in the design and erection of buildings and structures generally.

The New York State Society of Professional Engineers acknowledges the co-operation and the concern for the public welfare manifested by the New York State Board of Examiners for Architects and the New York State Council of Architects and the Committee on resolutions for this meeting respectfully suggests that:—

WHEREAS, the friendly relations between the Architectural and Engineering professions in this State have made possible a most necessary co-operation, and

WHEREAS to this co-operation may be attributed the recent enactment of legislative measures beneficial to both professions as well as to the public, especially noting the amendment to Section 300 of the Multiple Dwelling Act, now therefore be it

RESOLVED, that the New York State Society of Professional Engineers in meeting assembled, New York, May 20th, 1933, does record its appreciation of the collaboration of the Architectural profession in the preparation and enactment of legislation during the recent session at Albany, and be it further

RESOLVED, that the New York State Society extends to the Architectural profession its expression of good will and its hope for continued unity of action in the interest of professional and public welfare and in the further protection of life, health and property.

A RESOLUTION
Acknowledging Services of Senator Desmond.

WHEREAS the legislation relevant to the practice of engineering in this State, which legislation has been introduced at the instigation of the New York State Society of Professional Engineers, has during the past several years been of signal importance and successful eventuality, and

WHEREAS, the accomplishment of this legislation has been made possible through the ability and untiring zeal of its sponsor the Hon. Thos. C. Desmond, Senator from the 27th District and Director of the said Society, now therefore be it

RESOLVED, that the New York State Society, of Professional Engineers, in meeting assembled, New York, May 20th, 1932, does record its appreciation of the services rendered by its member, Senator Thos. C. Desmond, and be it further

RESOLVED, that the said Society commends Senator Desmond to the public consideration as an example of the capacity of the Engineer for legislative and administrative service.

RESOLUTION
Death of Alfred Fellows Masury

WHEREAS, God in His Infinite Wisdom has seen fit to cut short, whilst serving his country aboard the ill fated airship Akron, the earthly existence of Col. Alfred Fellows Masury, and

WHEREAS, the life of the said Alfred Fellows Masury was an example of courage, application and accomplishment worthy of the highest traditions of Society and of the profession of Engineering, now therefore be it

RESOLVED, that the New York State Society of Professional Engineers, in meeting assembled at New

York, May 20th, 1933, does solemnly record its sorrow at the loss of a distinguished member who, in living, served generously his country and his profession and in dying honored both, and be it further

RESOLVED, that to the wife of the Deceased, Mrs. Edna Masury, the Society, in behalf of the Engineering Profession of the State of New York, extends its most sincere sympathy in this hour of her misfortune.

RESOLUTION

Acknowledging Services of L. P. Middleton.

WHEREAS, the services rendered to the Profession by the retiring President Dr. David B. Steinman were greatly facilitated by the interest and capability of his Secretary, Mr. L. P. Middleton of the Staff of Robinson and Steinman,

Now therefore be it

RESOLVED, that the New York State Society of Professional Engineers in Meeting assembled at New York, May 20th, does record its appreciation of the aid rendered to the Society by Mr. Middleton and expresses regret at the loss of his services.

* * *

Recent Accomplishments of the State Society

(Continued from Page 12)

47. The State Society has cooperated closely with the National Committee for Trade Recovery in the campaign for a program of public works construction to restore prosperity.

48. Local Chapters of the State Society have taken the leadership in cooperation with other civic bodies in advancing the authorization and construction of worthy public works projects.

49. The number of County Chapters established by the State Society has been increased to twenty-five, covering 32 Counties of the State.

50. The active cooperation of other engineering organizations in the campaign to stop the unlicensed use of the designation "Engineer" has been enlisted.

51. The possibilities and effectiveness of a large-scale program of educational publicity on behalf of the Engineering Profession have been successfully demonstrated.

* * *

Chapter News

RAPHAEL J. SMYTH
Chairman of Committee of Chapter Activities

WESTCHESTER COUNTY

A regular meeting of the Westchester County Chapter was held on May 3rd, at the County Court House, White Plains.

Mr. John Avery, President of the Chapter, announced the appointment of the following members to serve on Standing and Special Committees:

Membership Committee: Mr. George T. Macbeth, Chairman, and Messrs. Vogel, Schreiner, McParlan and Schneider.

Publicity Committee: Mr. Joseph Barnett, Chairman, and Messrs. Brown and Krey.

Ethics Committee: Mr. Arthur Boniface, Chairman, and Messrs. Barnes and Andrews.

Program Committee: Mr. W. Frederick Welsch, Chairman, and Messrs. Applebee and Fisher.

County Building Code Committee: Mr. Edward Anderberg, Chairman, and Messrs. Sells and Finch.

County Water Supply Committee: Mr. Charles H. Sells, Chairman, and Messrs. Holleran and Watt.

Permanent Quarters Committee: Mr. Harold W. Watt, Chairman, and Mr. Anderberg.

Unemployment Committee: Mr. Leslie G. Holleran.

Constitution Revision Committee: Mr. William A. Smith, Chairman, and Messrs. Watt, Ryan, Belnap, Fenner, McDonald, Egbert.

Engineers' Status Committee: Mr. James M. Duffy, Chairman, and Messrs. Wright, Hartman, Collins and Gatslick.

Mr. Joseph Barnett reported upon the successful enactment into law of the measures introduced at the last session of the legislature under the sponsorship of the State Society and advised that the efforts of the Society and Chapters would now concentrate upon the enforcement of the provisions of the law as amended.

Mr. Leslie G. Holleran reported that 357 Engineers had registered for work relief with the Professional Engineers Committee on Unemployment in the Westchester area. Employment had been found for 156 of this number and investigations are being conducted with unremitting vigor to discover further opportunities for the employment of Engineers.

Discussing the recent action of the Chapter in recommending to the Reconstruction Finance Corporation approval of the Pelham Portchester Parkway Project, Mr. Holleran stated that 150 Engineers, Inspectors, Clerks and 1650 laborers could be employed in its prosecution. He gave estimates of the large quantities of materials which would be required for its construction calling attention to the increase of employment which would be necessitated by their manufacture, transportation and use. He also intimated that the contracts for its construction would contain a minimum wage provision.

The Chapter will give its utmost support to endeavors designed to secure financial assistance from the Reconstruction Finance Corporation to prosecute the Pelham Portchester Parkway improvement and other public works which will increase the employment of technical, skilled and unskilled workers and the President of the Chapter, Mr. John Avery, was empowered to enlist the interest of the members of the Congress from Westchester territory in the support of such measures as will advance that aim.

The Engineers' Status Committee, under the leadership of its Chairman, Mr. James M. Duffy, attended a meeting of the Board of Supervisors of the County and advocated the adoption of a comprehensive program of public works as an unemployment corrective. The representations of the Committee are receiving consideration and it is possible that a sub-committee of the Budget Committee of the Westchester Board of Supervisors will be appointed to confer with the Engineers' Status Committee to discuss the details of the problem.

* * *

QUEENS COUNTY

Mr. William H. Bertram, Chairman of the Chapter Activities Committee of Queens County Chapter, has reported that the Board of Aldermen of the City of New York, approving the recommendation of the Chapter, has officially designated the section of Queens Boulevard between Woodhaven Boulevard and Horace Harding Boulevard as the "Colonel Slattery Plaza" in honor of Colonel John Rudolph Slattery, late Deputy Chief Engineer of the Board of Transportation.

The Queens County Chapter is to be congratulated upon the success of its endeavor to perpetuate the memory of this outstanding member of the profession whose career was distinguished for his professional accomplishments and his untiring devotion to the performance of duty. The example of Queens Chapter might well be emulated by Chapters generally by paying tribute to Engineers who have contributed so notably to the physical advancement of our civilization.

Another success was accomplished in that the remonstrances of the Chapter to Hon. Frank J. Taylor, Chairman of the Emergency Home Relief Committee, against the practice of appointing men without engineering knowledge or training as Assistant Engineers on relief work were heeded. Such appointees are now given more appropriate titles.

It is of interest to note that strong sentiment is crystallizing in favor of the selection of an Engineer as a nominee for the Borough Presidency of Queens. Mr. Andrew K. Johnson, Chief Engineer of Highways, and Mr. J. Franklin Perrine, Chief Engineer of Sewers, are being considered for the honor and both have their ardent boosters and supporters.

Queens County Chapter gave a noteworthy demonstration of support to the State Society by sending a delegation, 25 strong, to the Annual Meeting of the State Society on May 20th.

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SUFFOLK AND NASSAU COUNTIES

The following verbatim report has been received through the courtesy of Mr. E. R. Cook, Secretary of the Suffolk County Chapter:

"The Suffolk County Chapter of the New York State Society of Professional Engineers held its regular meeting on Friday night, May 12, 1933, at the Hotel Huntington, Huntington, New York. The meeting was of special interest because it was the first joint meeting with the neighboring Nassau County Chapter and another organization of engineers called the Nassau-Suffolk Engineers, Incorporated. There were many invited guests and among them several of the officials of both Nassau and Suffolk County. There was also a very ex-

cellent turnout of engineers of all organizations mentioned who enjoyed a very excellent meal previous to the meeting.

"The occasion of the meeting was the first appearance before the Chapters of our incomparable President of the New York State Society of Professional Engineers, Dr. David B. Steinman who was the guest speaker of the evening. Dr. Steinman presented in a graphic and fascinating address the steady climb of the engineer in this State and other States to a position of a high professional status. For two hours Dr. Steinman held the entire audience enthralled with the story of how step by step the organization of professional engineers had achieved these steps against overwhelming odds. In conclusion Dr. Steinman answered various questions propounded to him by those present and in response to one question particularly, endorsed a national program for the construction of public works as the only way to conquer the present depression.

"A rising vote of thanks by those present could only very inadequately show the appreciation which the attendance felt for having in their midst the real leader in the enginering profession who has done and is still doing more to elevate the engineer professionally than anybody else.

"It is to be hoped that more joint meetings of the same nature can be held in order that the engineers of this and other States may become as one in the promotion of the profession and the achievement of the high ideals of our retiring President."

* * *

BRONX COUNTY

The Bronx County Chapter held its regular monthly meeting on May 4th at the Concourse Plaza Hotel.

The Chapter made a formal acknowledgment of thanks to Dr. D. B. Steinman, Senator Thomas C. Desmond and Arnold G. Chapman, Chairman of the Legislative Committee, for their efforts in advancing the recent legislative campaign of the State Society to a successful conclusion.

A special committee was appointed to study and report upon the prospect of the immediate unification of the Rapid Transit Systems of the City of New York and upon the amount of the fare which would make them self-sustaining.

The preparation of a list of self-liquidating public works which might properly be financed by funds made available by the Reconstruction Finance Corporation was assigned to a committee composed of the following members: Robert J. Eager, Chairman, Charles F. Giraud and Eugene Farnan.

Mr. Joseph F. Lamb, president of the Chapter, has reported with evident satisfaction, that thirty-five (35) Bronx Engineers manifested their interest in the State Society by their attendance at the Annual Society Meeting.

* * *

MONROE COUNTY

The Monroe County Chapter held a regular meeting at Rochester on May 15th.

The practice of engaging unemployed Engineers and Surveyors in Engineering work on public welfare projects at ridiculously low rates of compensation was discussed and a further study of conditions was ordered with a view to making specific remedial recommendations.

A number of members of the Chapter, having made a study of late Licensing Board examinations, reported that the examination of July, 1932 "particularly in the structural branch was extremely difficult and practically impossible to pass within the time allowed" and that the examination of January, 1933, swung too far toward the other extreme (i. e., it was too easy). After consideration and discussion of this report the following resolution was adopted: "Be it Resolved, That the Board of Examiners be requested to be more consistent in their examinations . . . making them such that they can be 'completed' within the limit allowed and not so easy as to result in an undesirable lowering of the standards of the profession."

The report was received through the courtesy of Mr. R. H. Hendrickson, Secretary-Treasurer of the Chapter.

* * *

KINGS COUNTY

Kings County Chapter held an exceptionally well attended meeting at the Brooklyn Engineers' Club on May 18th, at which the recently elected President of the Chapter, Mr. Linford S. Stiles, presided.

The Engineers of the Chapter have been keenly interested in the celebration of the 50th anniversary of the completion of the famous Brooklyn Bridge, the opening of which took place on May 24th, 1883. John Augustus Roebling, the Engineer who was primarily responsible for the design of this monumental structure, and his son Colonel Washington Augustus Roebling who supervised and directed its construction, were both residents of the City of Brooklyn which is now coextensive with Kings County and which was the largest city in America ever absorbed by another—the City of New York. The past presidents of the Chapter, Mr. Frederick Ward and Mr. Charles W. Burke, were members of the Mayor's Committee which arranged for the celebration of the historic occasion.

Mr. Roy C. Cram, Secretary of the Chapter, reports that the Committee on Franchises of the Chapter recently held a meeting with representatives of the Division of Franchises of the Board of Estimate and Apportionment which resulted in the adoption of a requirement by the Division that all construction plans hereafter submitted must be signed either by a licensed Professional Engineer or a Registered Architect.

Professor John C. Riedel, Chairman of the Legislative Committee, reporting upon recent enactments affecting the profession, discussed the McCall bill which provided for the creation of a Building Commission for the City of New York. The measure was generally commended but the desirability of certain amendments was indicated, particularly one which would make Engineers as well as architects and builders eligible for appointment as members of the Commission.

A resolution was adopted urging governmental sanction of a policy which would permit the employment of private capital in the construction of necessary revenue-producing public works where public funds are unavailable for construction purposes. A further resolution was approved, for submission to the State Society at its Annual Meeting, which advocated that plans for public works be prepared by Engineers in private practice for recognized professional fees and that contracts for such work be let only to responsible contractors.

A member of the Chapter who is at present unemployed has taken advantage of the policy adopted by both Society and Chapter under which member canvassers are paid a percentage of the membership fees of new members enrolled. This member by securing twelve (12) new members in a short time has demonstrated that even in these times of economic distress the membership of the Society can be expanded.

The next meeting of the Chapter which will be held on June 15th will be the last of the season; the following meeting will be held in October.

* * *

ERIE COUNTY

A meeting of the Erie County Chapter was held at the University Club of Buffalo, on May 11th, at which the president of the Chapter, Mr. Charles R. Waters, presided.

Mr. Fred Zurmuhlen,—the ubiquitous Chairman of the Membership Committee of the State Society—was the guest-speaker of the occasion. Recounting the accomplishments of the Society he described its objectives and their importance, in the development of the profession as a social agency, in so convincing a manner that eight of the visiting Engineers and Surveyors forthwith presented applications for membership in the Chapter.

The names of some of the Engineers of the Erie County Chapter have been appearing in the news columns of the public press: Mr. L. A. Harding and Mr. Charles R. Waters were recently elected to the presidency and the Board of Directors, respectively, of the Engineering Society of Buffalo; Mr. Fletcher H. Burke, Secretary of the Chapter, has been appointed by the Board of Trustees of the Village of Orchard Park as Chairman of the Village Board and has also been elected as President of the Welfare Association of the town of East Hamburg.

Erie County Chapter makes cordial acknowledgment of its appreciation of the services rendered to the profession by Dr. D. B. Steinman, during his presidency of the State Society, and pledges loyal and active support to his worthy and popular successor, Mr. Arnold G. Chapman.

* * *

DUTCHESS COUNTY

Speaking under the auspices of the Dutchess County Chapter Mr. David Cushman Coyle, Engineer, author and lecturer, delivered a highly interesting address on the subject of the "Necessary Developments for Economic Recovery" at Vassar Institute. Poughkeepsie, on May 17.

His discussion revealed a viewpoint which is somewhat disturbing to those

whose ideas were formed under the influence of technological conditions which existed a generation ago. He stated in effect that modern technological industrial processes require less labor and capital than those which were equally productive twenty or thirty years ago. As less labor is required in industry more of it should be withdrawn from economic activity by the reduction of working days and hours; and by the restriction of child labor and the establishment of old age pensions, the transfer of the adolescent and superannuated from the competitive producing class into a purely consuming class should be effected. As less capital is required in industry its accumulation should be restricted by shifting taxes from income to surplus and by more heavily weighting taxes on inheritances and "high-bracket" incomes. Moreover, the necessity for the expenditure of human energy in industrial activities will decrease with the increasing perfection of mechanical and electrical energy-supplying devices. The direction of this residual human energy toward the pursuit of intellectual and spirituaal ideals will result in the evolution of a higher civilization and a more widespread and enriching culture.

Mr. William A. Schuerman, Secretary-Treasurer of the Chapter, in his report on the lecture states that "Mr. Coyle delivered his scholarly address in such an interesting manner that the members of the audience were sitting on the edges of their seats and leaning forward with eager attention."

The Chapter will hold its next regular meeting in November.

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ORANGE COUNTY

The May meeting of the Orange County Chapter was held at Monroe, New York. It was addressed by Mr. Corydon T. Purdy of the firm of Purdy & Henderson Co., New York City, on the subject of "The Use of Steel in Modern Construction." Mr. Purdy gave a history of the development of formulae for the design of steel structural members since the first book on the subject was published in 1851, and described the advance made in their rolling and fabrication. He discussed various features of the design and construction of skeleton steel buildings in Europe, South America, and in the cities of New York, Chicago, St. Louis and Boston. His address was both interesting and highly instructive and was warmly applauded by the members present.

Orange County Chapter, through its Secretary, Mr. H. L. Felsh, extends a cordial invitation to members of Chapters in adjacent counties to attend its meetings as it is eager to establish friendly relationships which will promote cooperative action in advancing the work of the Society.

The Chapter pays its tribute of admiration of the services of Dr. Steinman in the interest of the profession and promises cordial support to the "Legal Engineer" from Albany County, Mr. Arnold G. Chapman, who now has the honor of guiding the destinies of the Society.

COLUMBIA COUNTY

At a regular meeting the the Columbia County Chapter, held in Hudson, on May 4th, 1933, the matter of the appointment of a County Superintendent of Highways for Columbia County was discussed and it was most strongly urged that the interests of the County would be best served by the appointment to this position of a Professional Engineer of recognized ability and experience in highway design, construction and maintenance. This sentiment was given formal expression in the following resolution which was unanimously adopted:

RESOLVED, That the Columbia County Chapter, New York State Society of Professional Engineers, recommends that the qualifications of candidates for the position of County Superintendent of Highways for Columbia County, for which a civil service examination is to be held June 3, 1933, should include the requirements that he must be a licensed professional engineer and shall have had at least three years experience in responsible charge of the design, construction and maintenance of modern highways and bridges, and it is further

RESOLVED, That a copy of this resolution be sent to the State Society of Professional Engineers, to the Secretary of the County Board of Supervisors of Columbia County and to the State Commissioner of Highways.

* * *

Examination Questions

(Continued from Page 11)

4 A bar of steel one square inch in cross section and 5 feet long elongates 0.04 inches under a tensile load of 20,000 pounds. What is the modulus of elasticity? What is the factor of safety if the ultimate stress is 65,000 pounds per square inch?

5 Calculate the deflection at the center of a wooden beam 2 inches wide by 12 inches deep, framed as a simple beam in a 12-foot span under a uniform load, when the allowable stress is 1200 pounds per square inch.

6 Find the diameter of a solid wrought-iron shaft to transmit 90 horsepower with a factor of safety of 8 when making 250 revolutions per minute. [Modulus of torsion = 50,000 pounds per square inch]

7 A rectangular beam 26 feet in span, noncontinuous, is required to support a brick wall 16 inches thick and 14 feet high. Determine the depth of the beam and the reinforcing steel for tension required when $fs = 16{,}000$, $fc = 650$ for equal strength in tension and compression, and $n = 15$. The width of the beam is fixed by the width of the brick wall. [Take the weight of the brick wall at 120 pounds per cubic foot.]

8 A steel column with an unsupported length of 12 feet carries a centrally applied load of 90,000 pounds and an eccentric load of 5000 pounds applied at a distance of 13 inches from the center line. What is the size of the column required?

9 Describe *one* of the following processes:

a The Bessemer process

b The manufacture of pig iron.

c The open hearth process of converting pig iron into structural steel.

10 State what materials you would use for *each* of the following purposes:

a Supporting a radio transmitting antenna.

b Insulating high-voltage transformer terminals.

c Holding the incandescent conductors of electric heaters.

d Separating wires within a telephone cable.

e Constructing underground cable ducts.

Give the reason for *each* answer.

11 State the kind of electrical conductor you would use (*a*) in first-class interior-wiring work, (*b*) under water, (*c*) in overhead service distribution. Describe *each* type of conductor fully and give reasons for the use of each.

12 Give *two* processes of treatment for the preservation of timber and describe *each* process fully.

Part I

STRUCTURAL PLANNING AND DESIGN

Tuesday, January 31, 1933—1:15 to 4:15 p, m., only

Answer any eight of the following questions. Slide rule and any reference books may be used. Return these questions with your answer paper.

1 Find the maximum bending moment in a simple beam, spanning 16 feet, carrying a uniformly distributed load of 80,000 pounds.

2 Find the maximum vertical shear in the beam described in question 1.

3 What bending moment can be safely carried by a 15-inch 42.9-pound I-beam?

4 What is the elongation of a steel rod, ½-inch diameter, 40 feet long, carrying a total suspended load of 6,000 pounds?

5 Give a standard column formula and explain the terms used.

6 Sketch a plate girder and name all the parts.

7 What is the safe load on a short concrete column, with effective section 12-inches square, containing 1.5% of longitudinal reinforcing?

8 What is the bearing value of a ¾-inch rivet in a ⅜-inch plate? What is the value of the rivet in single shear?

9 A vertical surface 40 feet high by 40 feet wide is exposed to a wind pressure of 30 pounds per square foot. What is the total overturning moment? What is the total horizontal shear?

10 Sketch a roof truss and name all the parts.

11 Sketch a column plan for the ground floor of an office building on a rectangular plot of 60-foot frontage by 80 feet deep.

12 What considerations govern the number of elevators to be provided in a tall office building?

Part I

MECHANICAL DESIGN AND ELECTRICAL PRINCIPLES

Wednesday, February 1, 1933—9:15 a. m. to 12:15 p. m., only

Answer any eight of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 A ship has engines of 2400 i. h. p. and 120 r. p. m.; the efficiency of engine and propeller combined is 0.667. Thrust shaft is 10 inches in diameter; thrust collars are 15 inches in diameter. If the coefficient of friction is 0.02, find the number of collars required in the thrust bearing when the ship makes 15 knots (1 knot equals 6080 feet) per hour. Allowable bearing pressure is 50 pounds per square inch. Find the horsepower absorbed by friction in the bearing.

2 A motor truck weighing 5000 pounds loaded is required to maintain a speed of 30 miles per hour on a 5% grade. The horsepower required to maintain this speed on a level road is 9. Calculate (*a*) the tractive effort and horsepower to maintain the speed of 30 miles per hour on the 5% grade, (*b*) the r. p. m. of the 32-inch diameter rear wheels, (*c*) the motor horsepower with 85% transmission efficiency, (*d*) the torque of the motor.

3 Show how to construct a disc cam with the line of motion of the follower passing through the shaft center. The shaft is 2 inches in diameter, the roller on the follower bus is ½ inch in radius and the rise of the follower is 1 inch. The cam rotates clockwise. The follower shall rise 1 inch in the first third of a turn with harmonic motion, remain stationary during the second third and fall with uniformly accelerated and retarded motion during the last third.

4 A building has a volume of 500,000 cubic feet a wall and roof surface of 25,000 square feet and glass surface of 8000 square feet. Assume 3 changes of air per hour, 0.25 for the wall and roof transmissive coefficient, and 1 for the glass surface. Calculate (*a*) the B. t. u.'s per hour required to maintain 70° F. with zero degrees outside temperature, (*b*) the necessary heating surface in a water tube boiler, (*c*) the square feet of grate surface, (*d*) the necessary low-pressure steam-radiating surface.

5 What will be the weight per foot of a round structural steel bar having the same strength in bending as a 5-inch standard structural steel I-beam weighing 10 pounds per foot?

6 The coupling of a 4-inch steel shaft must transmit the full strength of the shaft. What should be the width and thickness of a key for this purpose if the key material is the same as the shaft material and has a strength in compression 1½ times its strength in shear? The key is 6 inches long.

7 A cylindric tank is to withstand an internal pressure of 150 pounds per square inch. The longitudinal seam has an efficiency of 83%. The material has an ultimate tensile strength of 55,000 pounds per square inch and a factor of safety of 5 must be used. What thickness of plate must be used?

8 Explain the difference in construction, connection, characteristics and application between a shunt and a series direct-current motor.

9 Explain how it is possible to transform balanced three-phase voltages to balanced three-phase voltages using only two transformers. Determine the relative kilowatt outputs of the two transformers.

10 A balanced delta-connected load requires 100 kilowatts at 440 volts and 70% lagging power factor.

a Calculate the line current.

b Tell precisely what is meant by the power factor of this type of load.

11 A single-phase 60-cycle induction motor takes 7.8 amperes at 220 volts at a power factor of 0.78. Determine (*a*) the energy component of current, (*b*) the quadrature current, (*c*) the capacitance of a condenser which, if connected in parallel with the motor, would raise the circuit power factor to unity.

12 Compare the relative quantities of copper necessary to transmit electric power by a two-wire direct-current system and a three-wire, 3-phase alternating-current system. The power transmitted, the line losses and the length of the lines are the same for the two systems. The systems operate at the same r. m. s. voltages between any two-line wires. The power factor of the 3-phase load is unity.

13 What size copper wires should be used to connect a 15-hp. 220-volt motor to a 240-volt two-wire supply circuit, if the motor is located at a distance of 400 feet from the nearest terminals of that supply circuit? Assume 90% efficiency for the motor and a resistivity of 10.5 ohm-circular mils per foot for the wires.

14 A millivoltmeter has a resistance of 10 ohms and produces a full-scale deflection with 100 millivolts. Calculate the resistance units necessary to use with the instrument so that it can read up to 10 amperes and also so that it can read up to 50 volts. Give diagrams to show how these resistances are to be connected with the instrument for the purposes above mentioned.

15 Explain from the standpoint of physics why the current in an alternating-current circuit is not necessarily in phase with the impressed electromotive force. Make up an example of a circuit containing resistance, inductance and capacitance and calculate the current that will flow in it when an alternating voltage of stated frequency is impressed upon that circuit.

Part I
ENGINEERING ECONOMICS AND PRACTICE
(Administration)

Wednesday, February 1, 1933—1:15 to 4:15 p. m., only

Answer any eight of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 Assume that valuations are made for the following purposes:

a Rate regulation of public utilities.

b Purchase and sale.

c Adjustment of fire losses.

d Liquidation, as in bankruptcy and voluntary dissolutions.

e Taxation.

Select examples from any *two* of these purposes and give fully your methods and procedure in making a valuation in each case.

2 A machine costs $3200 and lasts 14 years. An alternative machine costs $4000 and lasts 20 years. If money is worth 5%, compounded annually, which is the preferable purchase, if there is no salvage value?

3 A contractor has 1,000,000 cubic yards of earth per year to excavate. By hand excavation, the cost is 40 cents per cubic yard. To do the same work by excavating machines, there are 17 machines required, each with a capacity of 30 cubic yards per hour and costing $7000 each.

The fixed charges on these machines are 24% per year. The cost of fuel, repairs and operating labor is 8 cents per cubic yard.

If the excavating is done at the rate of 84,000 cubic yards per month, in how many months will the machines pay for themselves?

4 What are the essential legal elements of a binding contract? What conditions may render a contract void?

5 On what different bases are engineers' fees charged? Give an example of each.

6 What are the principal factors to be considered in choosing the location for a prospective new factory and, when the site has been chosen, in laying out the plant?

7 What are the economic advantages of a network system of distribution of electrical energy over a radial system?

8 An investor has $25,000. The choice is presented of buying tax-free bank stock yielding 5½% net, and buying a piece of rental property, the ground being worth $5000 and the house $20,000. The property rents for $250 per month and the vacancy expectancy is 10%. The house has a useful life of 15 years. Taxes are $2.93 per $100 on a 50% valuation. Insurance is $135 per year. The repairs will average $150 per year. The real-estate agency charges 3% of the gross income. The owner pays 1½% income tax on net income. Which is the better investment? Give reasons and figures to support your opinion.

Are there any intangible elements that can not be expressed in figures? If so, what are they?

9 A power plant of 50,000-kilowatt capacity can be built at a first cost of $100 per kilowatt and will produce energy at an operating, fuel and maintenance cost of 0.8 cents per kilowatt hour. A similar, but cheaper plant of the same capacity can be built at a cost of $80 per kilowatt, but its operating, fuel and maintenance cost will be 1.2 cents per kilowatt hour.

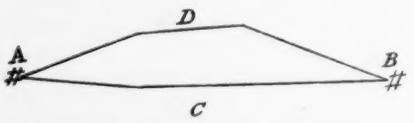
Assuming that interest, depreciation, insurance and taxes amount to 14% of the first cost annually, and that the capacity factor for the plan will be 40%, state which plant should be built. Give supporting data for your answer.

10 Professional Engineer A has designed and constructed a plant to turn out a certain quantity of a manufactured product for a client. The client begins operation but is unable to turn out the quantity of the manufactured product required by the specifications.

The client then goes to Professional Engineer B and requests him to make an investigation and report on the whole project. Professional Engineer B accepts this work and his investigation discloses that the plant is faulty in design and unable to produce the quantity of the manufactured product required by the specifications at a reasonable production cost.

State, in order, the steps that Professional Engineer B should take from the time of the first contact with his prospective client to the submission of his report. Give reasons for each step taken. State also the nature and scope of the report.

11 Find the cost of heating a cubic foot of water from a temperature of 60° F to a temperature of 200° F., assuming a thermal efficiency of 80%. Energy cost is 2 cents per kilowatt-hour.



12 Villages *A* and *B* (See diagram above) are connected by an old improved highway, *ACB*, 7 miles in length with a bituminous macadam pavement 16 feet wide. The alignment contains 500 degrees of curvature and maximum grades of 13%. In traveling from *A* to *B* by this route, an elevation 700 feet above *A* is reached.

The villages *A* and *B* are also connected by a dirt road, *ADB*, 9 miles in length. The alignment which can be obtained on this line will contain 400 degrees of curvature and maximum grades of 10%. In traveling from *A* to *B*, an elevation 400 feet above *A* is reached.

A reinforced concrete pavement, 20 feet in width, is to be constructed between *A* and *B*. Right of way, drainage and grading costs on proposed route *ADB* are 10% greater than on proposed route *ACB*.

Assuming any other data deemed necessary, show how you would determine the route for the proposed 20-foot concrete pavement from an economic and engineering standpoint.

(*To be Continued in Next Issue*).

* * *

New Jersey News
COMMENTS OF THE EDITOR

(Continued from Page 13)

neers are to be used in the work they should not be borrowed from the State Highway Department, but should be drawn from the hundreds of unemployed engineers throughout the State who are in dire need. The regular work of the highway engineers should continue. Nothing will be gained by stopping their work and throwing men out of employment in order to divert engineers to reforestation, which after all, cannot compare with highway construction for producing a direct return on the investment.

* * *

PROGRAM OF BROADCASTS FOR JUNE

Station WAAM, Thursdays, at 3:00 P. M. (1060 Broad Street, Newark).

June 1st, Asher Atkinson—Use of Unemployment Relief Workers on Permanent Works.

8th, Mahlon Parsons—The Fallacy of Buy Home Products Only.

15th, Daniel M. Vail—Rackets.

22d, Eric Fleming—Housing Developments.

29th, Alfons Weiler—The Unemployment Relief Misnomer.

Station WINS (New York American), Fridays, 5:50 P. M. (Studio at 110 East 58th Street, New York City).

June 2d, Albert R. Johnson—Engineering Education.

9th, David I. Kelly—Parks and the Public Purse.

16th, Joseph E. English—Who are the Experts?

23d, J. Wallace Higgins—As the Engineer Sees Municipal Cooperation.

30th, Victor Gelineau—Economics of the Coast.

* * *

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Following are the names, chapter affiliations and addresses of the present Trustees of the Association:

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Robert O. Bentley, Essex Chapter, 75 River Street, Newark, N. J.

Morris Goodkind, Middlesex Chapter, 32 Hardenburg St., New Brunswick, N. J.

* * *

New Jersey Chapter News
ERNEST F. WEEKS
Chairman of Chapter Activities Committee

(Continued from Page 13)

WEST JERSEY CHAPTER

West Jersey Chapter has not had a meeting for several months. However, the old active members are continuing their interest. The radio committee is functioning, and Mr. Claire E. Tilton, ex-President of the State Association and of the Chapter, has about completed the "Atlantic Cable" episode. The chapter also contributed its share to the radio talks, two being given by its members. On April 6th Mr. Tilton spoke over WAAM on the subject "Industry Brings Prosperity to the Farmers," and on April 14th, the Secretary spoke over WINS on the topic "Land Surveying—Its Value and Importance to the Public."

The next meeting is planned for June.

MIDDLESEX COUNTY

The last meeting of the Middlesex County Chapter was held on May 15th at the Elks Club in New Brunswick. A well attended dinner at the Club preceded the meeting. After a short business session Dr. Eugene E. Agger of Rutgers University was introduced by the President. Dr. Agger's subject "Inflation as a means of Business Recovery" proved of intensive interest to all of the 24 members present.

The March meeting held at the Elks Club also proved very interesting, and was addressed by Dr. M. F. Hoffman of Rutgers Theological Seminary, who, while not an engineer, covered the "Draining of the Zuyder Zee" very thoroughly and in an interesting manner.

The Chapter has one more meeting before the summer recess and it is the hope of the officers that all engineers of the county will endeavor to be out at this final round up.

Daniel M. Vail,
Secretary.

* * *

MONMOUTH COUNTY

The regular meeting of the Monmouth County Chapter of Professional Engineers and Land Surveyors was held in the Garfield-Grant Hotel, Long Branch, at 8:00 o'clock P. M., June 7th, 1933.

At this meeting arrangements were made for the annual clambake to be held in September. There was also a discussion of the radio program in which we are to take part with the Central Radio Committee. Preceding the meeting the usual dinner was held at 7 o'clock.

Your Secretary is ready to send your dues card upon receipt of $3.00, the amount of State and County dues.

Leo K. McKee,
Secretary.

* * *

UNION COUNTY

The Union County Chapter held its final meeting for this season on May 9th. About twenty members were present. They heard a very interesting program put on by Mr. Calvin V. Davis and Mr. Franklin Hudson, Jr. Mr. Davis gave a very instructive lecture on dams, particularly recent developments in dam construction. His talk was illustrated with slides of some forty dams. Mr. Hudson showed two reels, accompanied by an explanatory talk depicting the complete history of the construction of a dam in Oklahoma.

The officers for the coming year are:—Harry L. Paff, President; Harry Jurnecka, First Vice-President; George F. Rich, Second Vice-President; Rutledge P. Pray, Treasurer; John L. Miller, Secretary.

Meetings will be at the call of the President until Fall. A meeting of the Directors and Officers will be held in the near future to formulate a policy for the coming year.

John L. Miller,
Secretary.

* * *

ESSEX COUNTY

Twenty-eight members attended the final meeting of the season of the Essex County Chapter, held in Anderson's Grill, East Orange, Thursday,

LICENSES GRANTED

May, 1933

*Badger, Frank F.
Poughkeepsie, N. Y.
Bartoccini, Astolfo
Bronx, N. Y.
*Bastow, Albert N.
Whitehall, N. Y.
Bock, Henry, Jr.
New York, N. Y.
Brown, George L.
Rensselaer, N. Y.
Chism, George F.
Lake George, N. Y.
*Cannon, George W.
Binghamton, N. Y.
*Conner, H. McKean
Bronx, N. Y.
Coram, Samuel S.
Watertown, N. Y.
Curley, Roland S.
Elmsford, N. Y.
*Demarest, John M.
Endicott, N. Y.
*Dorlon, Elias G.
Schroon Lake, N. Y.
Field, Oscar S.
Rochester, N. Y.
*Forrestel, Eugene P.
Akron, N. Y.
Hinman, Ward E.
Albany, N. Y.
Hogan, Harry A.
Mt. Vernon, N. Y.
Howell, Francis K.
Beacon, N. Y.
Kandel, Charles
New York, N. Y.
Kendall, Ralph M.
Ridgewood, N. J.
Kenyon, John N.
New York, N. Y.
Landis, George H.
Poughkeepsie, N. Y.
*Leonard, Harry T.
Babylon, N. Y.
Lincoln, Samuel B.
New York City
Lichtenstein, Joseph
Brooklyn, N. Y.
Lucchetti, Raul
New York, N. Y.
McLaughlin, Warner
Port Henry, N. Y.
Mansfield, Percy B.
Jamestown, N. Y.
Negrey, Stephen
Brooklyn, N. Y.
*Neumaier, Martin
Brightwaters, L. I.
Newkirk, Burt L.
Schenectady, N. Y.
Osborn, Kenneth H.
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Poughkeepsie, N. Y.
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Rasberg, Ralph S.
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Ithaca, N. Y.
Roe, Ralph C.
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Saphore, Edward E.
Weehawken, N. J.
Spencer, John H.
Schenectady, N. Y.
Sticht, Alfred E. J.
Albany, N. Y.
*Tarbell, Harold L.
East Freetown, N. Y
Thyng, William H. C.
Olean, N. Y.
Toensfeldt, Hans C. F.
Bronx, N. Y.
Vaksdal, Alfred
Corning, N. Y.
White, Louis C.
Woodhaven, L. I.
Wiley, Charles S.
Rochester, N. Y.
Willetts, Frank
New York, N. Y.
*Wilson, Perry A.
Niagara Falls, N. Y.
Winterrowd, Wm. H.
New York, N. Y.
Young, Arthur
Brooklyn, N. Y.

* Land Surveyor only.

(Continued from Previous Page)

May 11. After dinner, President Bickley introduced each one present by name and business connection.

A brief business meeting was then held at which the president announced the committee chairmen for the coming year, as follows:

Program, H. W. Heilmann; Fellowship and Welfare, P. H. Glannan; Membership, J. O. G. Gibbons; Resolutions, A. S. Blank; Inter-County Relations, F. O. Runyon; Ethics, Herman Lehlbach; Legislation, M. R. Sherrerd; Radio, R. L. Hatfield. Each chairman is to select two or four additional members to complete his committee.

The Radio Committee reported it was making satisfactory progress, and asked for volunteer actors for the programs to be put on in the Fall. Several members responding to the request were given tryouts at the Newark Elks Club, May 26.

Mr. R. L. Hatfield introduced Mr. E. Allen Smith, trust officer of The Merchants and Newark Trust Company, who spoke on the Administration of Estates. Mr. Smith mentioned many things that the average person does not know and does not consider when making a will. If his advice were always followed, there would be very little trouble administering estates.

Colonel James W. Howard, a member of the Chapter, spoke on Concrete and on Purchase of Coal by Specifications, showing how large sums could be saved if heat units instead of weight were contracted for when buying coal.

The next meeting of the Chapter will be held the second week in October, the exact date and place to be announced.

W. E. Tennyson,
Secretary.

* * *

PASSAIC COUNTY

Thursday night, May 25th, 1933, was Engineers Club night in Passaic County and the rallying point was the Public Service Electric Co. Building, Prospect & Van Houten Sts., Paterson, N. J., at 7:30 P. M. A get together dinner at Steuben's Rathskeller on Ellison Street, Paterson, took place at 6:30 P. M.

There was a splendid turn out. Many important Committee Reports were acted upon, including those of the Nominating, Radio, Code of Ethics and Legislative Committees.

The speaker of the evening was Dr. F. J. Milman of Newark who delivered an illustrated lecture on "A Mile Under Earth or Mining Black Diamonds." This proved to be a very interesting subject to Metropolitan engineers.

The last meeting of the fiscal year will be held on June 22nd, 1933. Hold this date open. At this meeting the newly elected officers will be inducted into office and the program promises to be an unusual one. I understand the Committee is planning to make this meeting *"different."*

E. F. Weeks,
Secretary.

We wish to draw the attention of all licensed professional engineers, to our professional directory on page 27. "The American Engineer," true to the principles of the New York State Society, has set a precedent in engineering directories. The directory only contains names of duly licensed practitioners. It is our ambition to make this directory an outstanding one, and an exemplary one. A nominal charge of $30 for a yearly card in the directory, is certainly not prohibitive in comparison to the cost of other directory listings. The publisher will be glad to supply you with any additional information you might wish.

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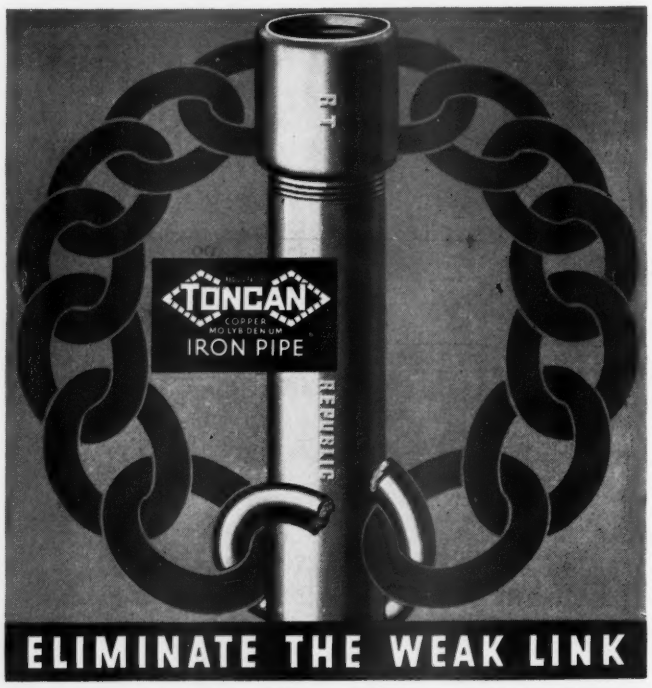

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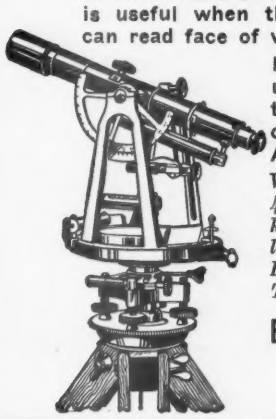

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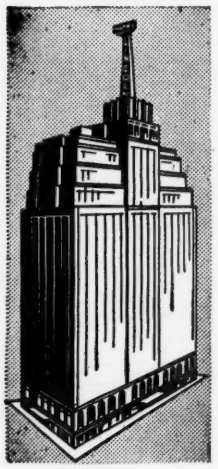

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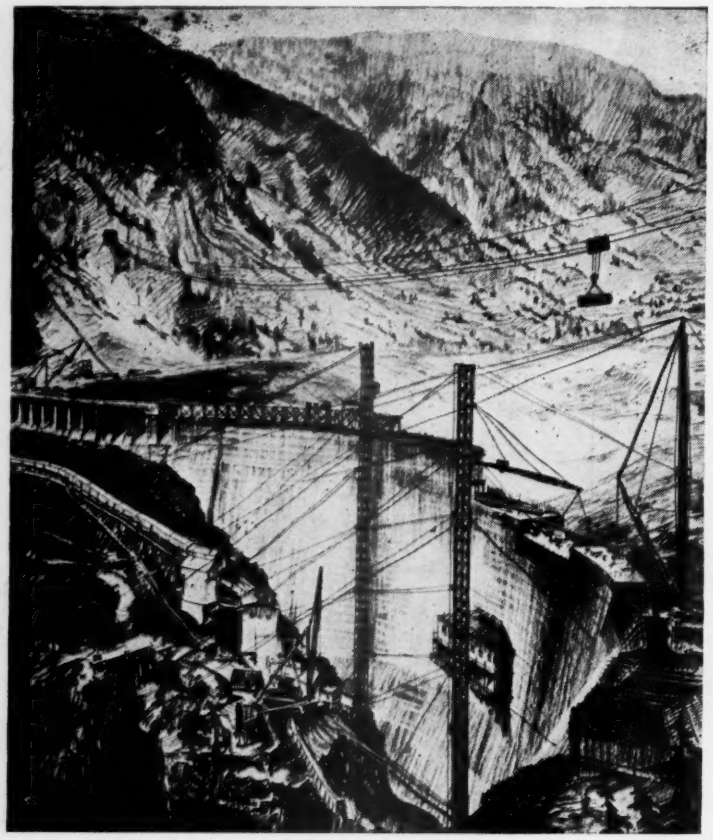

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This radiator is 27″ long; 23″ high and 7″ wide. Weighing only 42 lbs., it is easily portable.
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A Formula of Physics tells us point blank that a given amount of Electricity converts into so many B. T. U.'s—no more—no less. Common sense, however, suggests that the Effectiveness of an Air Heater depends not only on the quantity of B. T. U.'s generated but also, to a great degree, on the way in which the generated heat is discharged from the heater and distributed throughout the room.

From years of thought and experimentation to materially increase Heating Effectiveness through more efficient Discharge and Distribution came our DUCT ELECTRIC RADIATOR.

Externally it is a graceful and finely finished piece of furniture. Inside, you find an interesting, utterly simple Chassis, embodying 36 sq. ft. of copper heating surface arranged in multiple-flue formation—the patented "DUCT PRINCIPLE"

The sketches and descriptions below detail DUCT'S construction and operation. There are no fans or blowers—no moving parts at all, in fact, to require servicing or make a noise. The enormity of our heating surface plus the strong "flue action" of its patented arrangement accounts for DUCT'S amazing Effectiveness and consequent Economy.

A DUCT RADIATOR, using only 600 Watts, discharges the air at about 120°F; whereas an identic "ductless" heater, using 1200 Watts, discharges the air at only 130°. Our DUCT RADIATOR, switched up to 1200 Watts, discharges the air at 160°. This striking comparative demonstration is made daily at our offices.

The practical applications of an effective, economical and portable Electric Radiator—which is simply plugged in and switched on—are many and varied. Almost any place that needs extra or timely warmth, independent of a central plant, suggests a DUCT installation.

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DUCT ELECTRIC HEATER CORP.
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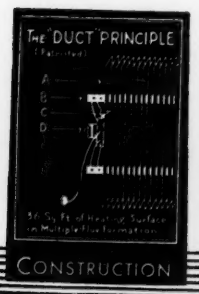
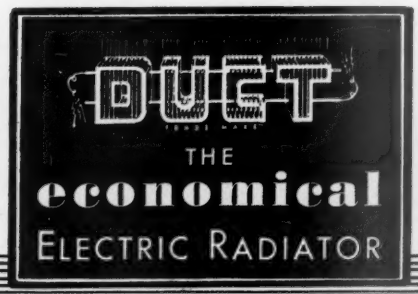


LEFT: Sketch reveals construction of patented DUCT chassis. When switch (D) is turned to "High" or "Low," copper plates (A) are heated by electric elements (B). The air in "ducts" (C) is heated and rises rapidly.



RIGHT: Thorough and rapid heating causes strong circulatory effect. Heated air is uniformly distributed throughout the room without the aid of fans or blowers. Only Duct offers this patented principle and its significant results.

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